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## **SOME PSYCHOLOGICAL TRAITS OF SLOVENIAN OLYMPIANS (BEIJING 2008) – A GENDER COMPARISON**

## **PSIHOLOŠKE ZNAČILNOSTI SLOVENSКИH OLIMPIJCEV (PEKING 2008) – PRIMERJAVA MED SPOLOMA**

### **ABSTRACT**

Our main aim in conducting this study was to investigate the psychological traits of Slovenian athletes who attended the Beijing 2008 Olympic Games (OG) and to ascertain whether there were any gender differences regarding those traits. The sample comprised 62 Slovenian athletes who participated in the Beijing 2008 Olympic Games. The following standardised survey questionnaires were used: the Freiburg Personality Questionnaire – FPI 76 (Bele – Potočnik, Hruševar, & Tušak, 1984), the Competitive State Anxiety Inventory – CSAI-2 (Martens, Vealey, & Burton, 1990), the Coping Responses Inventory – CRI-Adult (Moos, 1993), the Dispositional Resilience Scale – DRS II (Sinclair & Oliver, 2003), the Sport Orientation Questionnaire – SOQ (Gill & Deeter, 1988), the Self-Motivation Inventory – SMI (Dishman, Ickes, & Morgan, 1980) and a questionnaire measuring satisfaction, success attributions, expected self-efficacy and expectations of success (Tušak, 1997). The differences between the male and female athletes regarding the 38 variables were only statistically significant with regard to self-confidence, masculinity and cognitive anxiety. Differences nearing the 5% significance level were also found on the scales of impulsivity and somatic anxiety. The findings of this study are expected to considerably contribute to the understanding of the psychological traits of Olympians; they should help coaches and sport psychologists build more (gender-) specific psychological preparation plans for future Olympic Games.

*Key words:* Olympic Games, psychological traits, gender comparison

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### **IZVLEČEK**

Namen raziskave je bil preučiti psihološke značilnosti slovenskih športnikov, ki so sodelovali na Olimpijskih igrah (OI) v Pekingu 2008 in ugotoviti, ali obstajajo razlike v teh značilnostih glede na spol. V vzorec smo zajeli (n = 62) slovenske olimpijce (Peking 2008). Za zbiranje spremenljivk smo uporabili standardizirane anketne vprašalnike: FPI 76 (Bele – Potočnik et al., 1984), CSAI-2 (Martens et al., 1990), CRI-Adult (Moos, 1993), DRS II (Sinclair & Oliver, 2003), SOQ (Gill & Deeter, 1988), SMI (Dishman et al., 1980) ter vprašalnik zadovoljstva, atribucij uspeha, pričakovane samoučinkovitosti in uspešnosti (Tušak, 1997). Ugotovili smo, da so razlike med športniki in športnicami v proučevanih 38 spremenljivkah statistično značilne zgolj pri samozavesti, maskulinosti in kognitivni anksioznosti. Razlike blizu 5% stopnji značilnosti so se izkazale v impulzivnosti in somatski anksioznosti. Ugotovitve raziskave bodo pomembno prispevale k poznavanju psiholoških značilnosti olimpijcev. Pomagale bodo trenerjem in športnim psihologom k bolj natančni in bolj specifični (glede na spol) psihološki pripravi športnikov na olimpijske igre.

*Ključne besede:* Olimpijske igre, psihološke značilnosti, primerjava med spoloma

## INTRODUCTION

Numerous studies offer explanations of achievement in sports based on physiological and morphological aspects, motor abilities, the level of overall physical fitness as well as fitness in more specific areas. In the last 25 years we have seen increasing interest in research into sports psychology. Scientists have come to realise the importance of psychological fitness in their studies (Hung, Lin, Lee, & Chen, 2008) and started to highlight the growing importance of athletes and trainers working in close liaison with sports psychologists. Similarly, great significance has been ascribed to trainers' knowledge of sports psychology (Hung et al., 2008) as well as psychopathology (Morgan, 1985). It has become clear that psychological skills are a prominent part of success in sports (Williams & Krane, 1998). Studies indicate that special behavioural and personality traits are typically found in top athletes – traits influencing their success such as: emotional stability, extraversion, dominance, integrative functions, mental sharpness, win orientation (Tušak & Tušak, 2002), controlled aggression, self-confidence, persistence and sociability (Tušak, Tušak, & Barborič, 2002). Tušak and Burnik (2001) state that athletes are different from the general population – a specific psychological profile is typically found in athletes as opposed to non-athletes. Athletes are generally more extraverted, i.e. more outwardly oriented in their communication with the environment, more performance-oriented (have a more prominent need to succeed in life), they are also more aggressive, but are able to control their aggression better due to their higher emotional stability, higher frustration and pain tolerance, greater self-confidence and self-perception and are therefore more active and better at coping with stressful events and tensions (Tušak, Marinšek & Tušak, 2009). Successful athletes typically have a higher degree of self-confidence and a lower degree of anxiety (Covassin & Pero, 2004; Trampuž, 2002; Zeng, Leund & Liu, 2008), are more focused and able to control their emotions better (Rabazza & Bartili, 1998). In the last few years, there has been increasing interest in research into the psychological traits of athletes participating in the Olympics. Morgan (1979) was one of the first to study the psychological factors (mood states) influencing a successful performance at the Olympics and found that successful athletes (a study conducted on rowers and wrestlers) have a psychological profile characterised by more positive characteristics such as a lower degree of tension, depression, confusion, fatigue and anger. The important work of Orlick and Partington (1988) indicates the significance of mental skills for success at the Olympics. The mental skills found to bear an important influence on the success of Canadian Olympians included: commitment, a focus on high-quality training, and preparing for competition in advance. Similar findings were reported by Gould, Eklund and Jackson (1992a, 1992b). In their guided interviews with Italian archers (Olympians), Rabazza and Bartoli (1998) found that positive expectations, self-confidence, competitiveness, motivation, concentration and control of emotions are some of the key psychological factors contributing to competitive success. Other factors contributing to success at the Olympics reported by the majority of studies are: the ability to remain focused, top quality training and goal setting, simulations of competitive situations, mental preparation prior to competitions and having a plan to deal with distractions. Successful athletes were also found to use psychological strategies in dealing with the various stressors typically present in competitive situations (Stanimirovič & Hanrahan, 2010). Research also indicates there are some gender differences regarding the psychological traits of male and female athletes, as for instance reported by Eysenck, Nias and Cox (1982). Butt (1997) found athletes to be more extraverted, more emotionally stable and to have a higher need for achievement. Regarding gender differences, Tušak et al. (2009) report findings about female athletes achieving higher neuroticism scores

compared to male athletes, and less emotional stability making it harder for them to control their emotions. Further, female athletes are generally more prone to feelings of depression and anxiety, they are less aggressive and dominant, more shy and insecure in decision-making. Due to a lower level of activity and self-confidence, they are also less competitive. On the other hand, female athletes are more considerate, tolerant and understanding. They find communication extremely important and also put more emphasis on maintaining friendly relations with others.

In Slovenia (a country with a population of two million that won five Olympic medals in Beijing, placing it in fifth position in terms of the medals/population ratio among all participating countries in Beijing), the past few years have seen growing interest in studies examining athletes' personality, their motivation, goal orientation, competitiveness, anxiety, self-confidence, ways of coping with stress and their personality hardiness. Studies (Trampuž, 2002; Tušak, 1997; Tušak et al., 2009) indicate significant differences between individuals according to the level of their sports involvement (lower vs. higher degree of involvement) and according to their gender. However, there is still a lack of research delving into the psychological traits of those with the highest degree of sports involvement (the highest ranking top athletes) as well as gender differences of the latter. The aim of our research was to examine the psychological traits of athletes who participated in the 2008 Beijing Olympics. The main research problem was to ascertain whether the male and female athletes differed in the examined psychological factors. Knowledge about those psychological factors is important as it allows the better and gender-specific psychological preparation of athletes for the Olympic Games.

## METHODS

### Participants

The sample consisted of Slovenian Olympic team members who participated in the Beijing 2008 Olympics. Out of the 62 Beijing 2008 Olympians, we managed to perform a survey with 56 athletes (aged  $26 \pm 5.5$  years), of whom 37 were male (aged  $26.8 \pm 5.8$  years) and 19 female (aged  $24.4 \pm 4.5$  years).

### Instruments and procedures

The data were collected in accordance with psychological ethical requirements of survey questionnaires. Completing the questionnaires took place on 21 July 2008 in Ljubljana (during the last meeting before the athletes' departure for the Olympic Games, 18 days prior to the Olympics) and the procedure was led by a sports psychologist. Prior to all the measurements, the participants were familiarised with the measurement procedure and the aim of the study. In the first survey questionnaire (Tušak, 1997), the following data were obtained: the athletes' place of residence, their formal education and the formal education of their parents, the sport discipline the participants compete in, the number of years of active sport participation and the date of birth. The second part of the survey questionnaire measured a participant's *satisfaction* with the financial and organisational support of the Slovenian Olympic Committee and the national sports association for their sport discipline as well as their satisfaction with their attendance at competitions and participation in sports, their performance, competition results, their trainer and their training programme, as well as training conditions. A total satisfaction score was calculated as the average of the individual satisfaction scores. Cronbach's internal consistency

coefficient of the total satisfaction score was  $\alpha = .73$ . In the third part of the survey, we identified the athletes' construction of *reasons for success*, i.e. *success attributions* at competitions. It thus explored the athletes' attributions of success to their *efforts* and their *abilities*, both crucial for achieving good results. Attributions to effort were measured by three different questions (in fact their average value), while their reliability was assessed by calculating the internal consistency coefficient  $\alpha = .75$ . The fourth part of the first questionnaire examined an athlete's *expected self-efficacy* measured by calculating the mean of two questions with an internal consistency reliability coefficient  $\alpha = .77$ . The fifth part of the first questionnaire then considered whether (and to what degree) the athletes *expect a good result (success)* (measuring expectations of present and future success as well as expected success at the Beijing Olympic Games). The average of all three scores of an athlete's expectations regarding success amounted to the total success score with an internal consistency coefficient  $\alpha = .70$ . Data regarding a participant's personality structure was obtained by using the *Freiburg Personality Questionnaire FPI 76* (Bele-Potočnik et al., 1984). The version included 76 items and measured nine personality traits of Order I (*neuroticism, impulsivity, depression, irritability, sociability, calmness, dominance, inhibitedness, sincerity*) and three personality traits of Order II (*extraversion, emotional instability, masculinity*). The internal consistency coefficients ( $\alpha$ ) for individual trait scales are as follows: .67 for neuroticism, .68 for impulsivity, .74 for depression, .80 for irritability, .75 for sociability, .74 for calmness, .63 for dominance, .76 for inhibitedness, .67 for sincerity, .71 for extraversion, .74 for emotional instability and .70 for masculinity. We further examined the athletes' *cognitive state anxiety, somatic state anxiety* and *competitive state self-confidence* by applying the *Competitive State Anxiety Inventory – CSAI-2* (Martens et al., 1990). Internal consistency coefficients ( $\alpha$ ) for each of the two scales (traits) of the CSAI-2 are reported to range between .79 and .90. The measured *competitive state self-confidence* represents an athlete's self-confidence right before a competition, while *somatic state anxiety* signifies the physiological response due to anxiety. *Cognitive state anxiety* corresponds to a competing athlete's cognitive (psychological) state in the moments right before the start. The *CRI-Adult* (Moos, 1990) questionnaire for coping with stress was used to ascertain athletes' *strategies for coping with stressful life circumstances*. The second part of the questionnaire (48 items) is used for measuring how an athlete copes with stress. The questionnaire consists of the following dimensions: *logical analysis, positive reappraisal, seeking support or guidance, problem-solving* (with the above dimensions assessing ways of coping aimed 'towards the problem'); *cognitive avoidance, acceptance or resignation, seeking alternative rewards and emotional discharge* (dimensions assessing ways of coping directed 'away from the problem'). The dimension of logical analysis measures the participants' cognitive effort to understand the stressor and their attempts to mentally prepare for the stressor as well as its consequences. The dimension of positive reappraisal measures attempts to arrive at an explanation and redefine the problem in a positive way while accepting the reality of the situation. The dimension of problem solving assesses behavioural attempts to act and deal with a problem directly. In contrast, cognitive avoidance is a dimension representing the cognitive attempts athletes make to avoid thinking about a problem realistically. The dimension of acceptance meanwhile measures cognitive attempts made to respond to a problem by simply accepting it. Seeking alternative rewards stands for a range of behavioural attempts at engaging in new activities and creating new sources of gratification. Emotional discharge measures any behavioural attempts to release tension through a discharge of negative emotions. The internal consistency coefficients ( $\alpha$ ) for each of the scales (traits) of the CRI-Adult are reported to range between .52 and .92. The *DRS II* questionnaire (Sinclair & Oliver, 2003) was also used as a measure of *hardiness*. The questionnaire's 18 items

test for *control*, *commitment* and *challenge* and the instrument's construct validity has been confirmed. The internal consistency coefficient ( $\alpha$ ) for the total score obtained is .85. The positive dimensions of the questionnaire are represented by *control* ( $\alpha = .79$ ), *commitment* ( $\alpha = .79$ ) and *challenge* ( $\alpha = .77$ ). The higher the score on the latter dimensions, the more a person is resistant to competitive stress. Positive dimensions of the questionnaire are directly related to a higher level of psychological hardiness. The questionnaire is further composed of three negative dimensions, i.e. *helplessness* ( $\alpha = .93$ ), *alienation* ( $\alpha = .88$ ) and *rigidity* ( $\alpha = .66$ ). The three negative dimensions indicate greater vulnerability to stress. The *Sport Orientation Questionnaire* (SOQ) – Form B (Gill & Deeter, 1988) was further used to identify the athletes' *sport orientation*. The questionnaire consists of 25 statements, with 13 measuring the degree of a person's *competitiveness*, 6 measuring a *win orientation* and 6 statements assessing *goal orientation*. Regarding the questionnaire's reliability, authors report the following internal consistency coefficients: .81 for goal orientation, .86 for win orientation and .94 for competitiveness. This can be compared with the test-retest method which yielded the following results:  $r = .89$  for competitiveness,  $r = .82$  for win orientation and  $r = .73$  for goal orientation. *Self-motivation*, i.e. the athletes' *internal motivation* was measured by the *SELF-MOTIVATION INVENTORY* (Dishman et al., 1980). The questionnaire consists of 40 statements which measure athletes' self-motivation (internal motivation). The internal consistency coefficient ( $\alpha$ ) was reported by the authors to range between .86 and .91, while the test-retest method yielded a coefficient of  $r = .92$ .

### Data analysis

The data were analysed using the statistical package PASW Statistics 18.0.3. Basic variable distribution statistics were computed. A general linear model and one-way analysis of variance (ANOVA) was used to test for differences in the psychological factors between the male and female athletes.

## RESULTS

As found by the general linear model, the males and females differ in the set of psychological characteristics (Wilks'  $\lambda = 0.13$ ,  $p = 0.003$ ). As shown in Table 1 and Figure 1, the only significant differences between the male and female athletes with regard to the examined personality structure dimensions were found for *masculinity* (males:  $M = 5.00$ ,  $SD = 1.18$ ; females:  $M = 4.11$ ,  $SD = 1.24$ ;  $p = .011$ ).

Differences nearing significance were further found on the scale of *impulsivity* (males:  $M = 2.73$ ,  $SD = 1.63$ ; females:  $M = 1.89$ ,  $SD = 1.29$ ;  $p = .057$ ). The results of the personality dimensions of the male athletes who completed the survey revealed they are on average only moderately more (differences were not statistically significant) *irritable* (males:  $M = 1.49$ ,  $SD = 1.28$ ; females:  $M = 1.00$ ,  $SD = 1.49$ ), *depressed* (males:  $M = 1.95$ ,  $SD = 1.65$ ; females:  $M = 1.47$ ,  $SD = 1.39$ ), *dominant* (males:  $M = 1.73$ ,  $SD = 1.68$ ; females:  $M = 1.05$ ,  $SD = 1.55$ ) and *emotionally unstable* (males:  $M = 1.76$ ,  $SD = 1.71$ ; females:  $M = 1.53$ ,  $SD = 1.50$ ). The female athletes had a higher average score on *neuroticism* (females:  $M = 1.58$ ,  $SD = 1.35$ ; males:  $M = 1.22$ ,  $SD = 1.34$ ); they were also found to be somewhat more *calm* (females:  $M = 5.05$ ,  $SD = 1.47$ ; males:  $M = 4.62$ ,  $SD = 1.52$ ), *inhibited* (females:  $M = 2.21$ ,  $SD = 1.13$ ; males:  $M = 2.05$ ,  $SD = 1.39$ ), *sincere* (females:  $M = 3.53$ ,  $SD = 1.35$ ; males:  $M = 3.51$ ,  $SD = 1.77$ ), *extraverted* (females:  $M = 4.26$ ,  $SD = 2.02$ ; males:  $M = 4.16$ ,  $SD = 2.15$ ).

and *sociable* (females:  $M = 5.58$ ,  $SD = 1.57$ ; males:  $M = 5.24$ ,  $SD = 1.79$ ) than the male athletes, although the abovementioned differences never reached the level of significance.

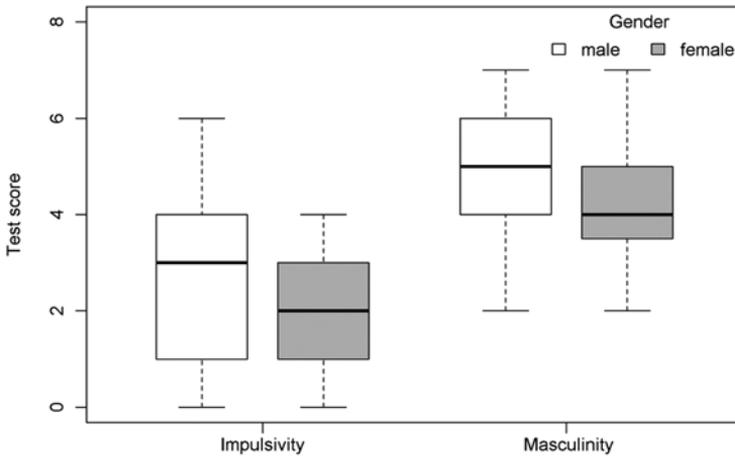


Figure 1: Box-plots for impulsivity and masculinity

Table 1: Statistical distribution of psychological characteristics and test for differences between the male and female Slovenian Olympians

	Total (n = 56)		Male (n = 37)		Female (n = 19)		Differences (gender)	
	M	SD	M	SD	M	SD	F	p(F)
Irritability	1.32	1.36	1.49	1.28	1.00	1.49	1.617	.209
Depression	1.79	1.57	1.95	1.65	1.47	1.39	1.140	.290
Impulsivity	2.45	1.56	2.73	1.63	1.89	1.29	3.778	.057
Neuroticism	1.34	1.34	1.22	1.34	1.58	1.35	.920	.342
Calmness	4.77	1.50	4.62	1.52	5.05	1.47	1.035	.313
Dominance	1.50	1.65	1.73	1.68	1.05	1.54	2.155	.148
Inhibitedness	2.11	1.30	2.05	1.39	2.21	1.13	.178	.674
Sincerity	3.52	1.63	3.51	1.77	3.53	1.35	.001	.978
Extraversion	4.20	2.09	4.16	2.15	4.26	2.02	.029	.866
Emotional instability	1.68	1.63	1.76	1.71	1.53	1.50	.247	.621
Sociability	5.36	1.71	5.24	1.79	5.58	1.57	.479	.492
Masculinity	4.70	1.26	5.00	1.18	4.11	1.24	6.976	.011
Cognitive anxiety	16.43	4.95	15.32	4.28	18.58	5.55	5.911	.018
Somatic anxiety	16.21	4.02	15.54	3.99	17.53	3.84	3.190	.080
Self-confidence	28.07	4.73	29.43	4.22	25.42	4.65	10.593	.002
Logical analysis	11.30	2.67	11.35	2.63	11.21	2.82	.034	.854
Positive reappraisal	10.95	3.01	10.70	3.06	11.42	2.93	.710	.403
Seeking guidance	9.91	3.01	9.57	2.69	10.58	3.53	1.428	.237
Problem solving	13.38	3.31	13.22	3.22	13.68	3.54	.247	.621
Cognitive avoidance	8.21	3.69	8.22	3.65	8.21	3.85	.000	.996
Acceptance/resignation	5.21	3.01	5.08	2.56	5.47	3.81	.210	.649
Seeking alternative rewards	8.55	3.39	8.59	3.39	8.47	3.50	.016	.901

	Total (n = 56)		Male (n = 37)		Female (n = 19)		Differences (gender)	
	M	SD	M	SD	M	SD	F	p(F)
Emotional discharge	5.98	3.25	5.73	3.50	6.47	2.72	.654	.422
Competitiveness	55.20	11.83	54.16	13.83	57.21	6.24	.831	.366
Win orientation	22.77	5.21	22.54	5.94	23.21	3.44	.205	.653
Goal orientation	25.84	5.53	25.11	6.51	27.26	2.31	1.942	.169
Control	12.59	1.63	12.68	1.63	12.42	1.64	.304	.584
Helplessness	5.00	1.97	4.78	1.72	5.42	2.39	1.318	.256
Commitment	10.43	1.58	10.27	1.54	10.74	1.66	1.093	.300
Alienation	4.93	1.81	4.84	1.95	5.11	1.52	.271	.605
Challenge	11.68	1.87	11.73	1.71	11.58	2.19	.080	.778
Rigidity	9.25	2.65	9.08	2.89	9.58	2.14	.438	.511
Satisfaction	3.83	.38	3.81	.40	3.86	.33	.157	.694
Effort	4.66	.38	4.63	.41	4.72	.34	.665	.418
Ability	4.25	.69	4.35	.72	4.05	.62	2.383	.128
Perception of success	4.30	.50	4.31	.45	4.29	.61	.022	.882
Expectation of success	4.36	.56	4.32	.61	4.44	.46	.602	.441
Self-motivation	155.07	20.25	154.46	21.75	156.26	17.46	.098	.756

Legend: n – no. of respondents; M – arithmetic mean; SD – standard deviation; F – F-test; p(F)– significance of F-test

With regard to *somatic anxiety* (males: M = 15.54, SD = 3.99; females: M = 17.53, SD = 3.84; p = .080), the female athletes’ scores were higher than those of the male athletes, with differences close to the level of significance (Table 1 and Figure 2). Significant differences between the male and female athletes were further found in *cognitive anxiety* (males: M = 15.32, SD = 4.28; females: M = 18.58, SD = 5.55; p = .018). The male athletes’ *self-confidence* scores were, furthermore, significantly higher than those of the female athletes (males: M = 29.43, SD = 4.22; females: M = 25.42, SD = 4.65; p = .002).

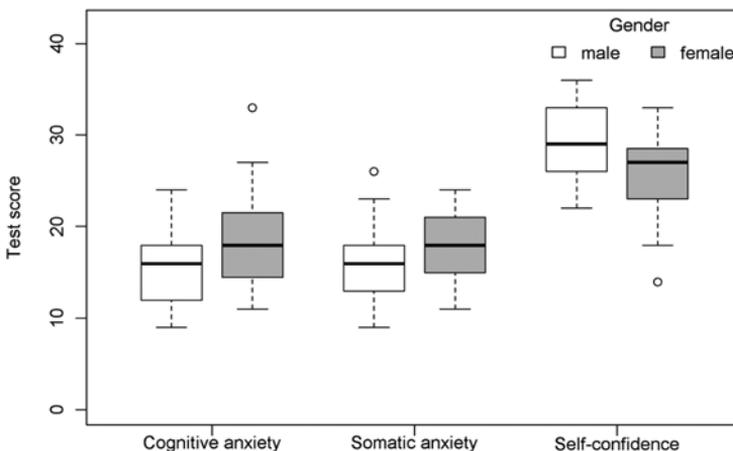


Figure 2: Box-plots for cognitive anxiety, somatic anxiety and self-confidence

The strategies most commonly used to cope with stressful life circumstances by both male and female athletes (combined scores) were the following: *problem solving* ( $M = 13.38$ ;  $SD = 3.31$ ), *logical analysis* ( $M = 11.30$ ;  $SD = 2.67$ ), *positive reappraisal* ( $M = 10.95$ ;  $SD = 3.01$ ) and *seeking support* ( $M = 9.91$ ;  $SD = 3.01$ ). On the other hand, the least used strategies were found to be: *acceptance of the problem (resignation)* ( $M = 5.21$ ;  $SD = 3.01$ ), *release of emotions – emotional discharge* ( $M = 5.98$ ;  $SD = 3.25$ ), *cognitive avoidance* ( $M = 8.21$ ;  $SD = 3.69$ ), and *seeking alternative rewards* ( $M = 8.55$ ;  $SD = 3.39$ ). The male athletes reached somewhat higher (but not significantly higher) average scores for the following dimensions: *logical analysis* (males:  $M = 11.35$ ,  $SD = 2.63$ ; females:  $M = 11.21$ ,  $SD = 2.82$ ), *cognitive avoidance* (males:  $M = 8.22$ ,  $SD = 3.65$ ; females:  $M = 8.21$ ,  $SD = 3.85$ ) and *seeking alternative rewards* (males:  $M = 8.59$ ,  $SD = 3.39$ ; females:  $M = 8.47$ ,  $SD = 3.50$ ). In contrast, the female athletes had slightly higher (but not significantly higher) average scores with regard to *positive reappraisal* (females:  $M = 1.58$ ,  $SD = 1.35$ ; males:  $M = 1.22$ ,  $SD = 1.34$ ), *seeking support* (females:  $M = 10.58$ ,  $SD = 3.53$ ; males:  $M = 9.57$ ,  $SD = 2.69$ ), *solving problems* (females:  $M = 13.68$ ,  $SD = 3.54$ ; males:  $M = 13.22$ ,  $SD = 3.22$ ), *accepting the problem (resignation)* (females:  $M = 5.47$ ,  $SD = 3.81$ ; males:  $M = 5.08$ ,  $SD = 2.56$ ) and *emotional discharge* (females:  $M = 6.47$ ,  $SD = 2.72$ ; males:  $M = 5.73$ ,  $SD = 3.50$ ). The sports orientation questionnaire analysis revealed that the male athletes (total scores for male and female athletes) have a somewhat higher *goal orientation* ( $M = 25.84$ ;  $SD = 5.53$ ) than *win orientation* ( $M = 22.77$ ;  $SD = 5.20$ ). Moreover, the results also reveal high *competitiveness* scores ( $M = 55.20$ ;  $SD = 11.83$ ). The male athletes had lower scores (although the differences are not significant) than the female athletes for the *competitiveness* dimension (males:  $M = 54.16$ ,  $SD = 13.82$ ; females:  $M = 57.21$ ,  $SD = 6.24$ ). The female athletes in our study had a higher *win orientation* than their male counterparts (males:  $M = 22.54$ ,  $SD = 5.94$ ; females:  $M = 23.21$ ,  $SD = 3.44$ ), although the differences failed to reach the level of significance. The average *goal orientation* scores of the male athletes were lower (with the differences again not reaching the level of significance) than the average scores of the female athletes (males:  $M = 25.11$ ,  $SD = 6.51$ ; females:  $M = 27.26$ ,  $SD = 2.31$ ). Further, the athletes in our study (the total male and female athletes' scores) with regard to the indicators of hardiness reported a somewhat greater resistance to stress in the sub-dimensions of *control* ( $M = 12.59$ ;  $SD = 1.63$ ) and *challenge* ( $M = 11.68$ ;  $SD = 1.87$ ), while their scores for the *commitment* dimension were lower ( $M = 10.43$ ;  $SD = 1.58$ ). Two indicators of greater stress vulnerability were found with all athletes, regardless of their gender, in two sub-dimensions of the inventory, i.e. *alienation* ( $M = 4.93$ ;  $SD = 1.81$ ) and *helplessness* ( $M = 5.00$ ;  $SD = 1.97$ ). For all three negative sub-scales of personality hardiness, i.e. *helplessness* (males:  $M = 4.78$ ,  $SD = 1.72$ ; females:  $M = 5.42$ ,  $SD = 2.39$ ), *alienation* (males:  $M = 4.84$ ,  $SD = 1.95$ ; females:  $M = 5.10$ ,  $SD = 1.52$ ) and *rigidity* (males:  $M = 9.08$ ,  $SD = 2.89$ ; females:  $M = 9.58$ ,  $SD = 2.14$ ), somewhat higher average scores were found with the female athletes (with the differences failing to reach the level of significance). The only positive scale on which the female athletes reached a higher average score than the male athletes was the *commitment* score (males:  $M = 10.27$ ,  $SD = 1.54$ ; females:  $M = 10.74$ ,  $SD = 1.66$ ), although once again the differences were not significant. The male athletes' average scores were somewhat higher (differences below the level of significance) for the variables of *control* (males:  $M = 12.68$ ,  $SD = 1.63$ ; females:  $M = 12.42$ ,  $SD = 1.64$ ) and *challenge* (males:  $M = 11.73$ ,  $SD = 1.71$ ; females:  $M = 11.58$ ,  $SD = 2.19$ ). The *total satisfaction score* was found to be marginally higher with the female athletes than with the males (males:  $M = 3.81$ ,  $SD = 0.40$ ; females:  $M = 3.86$ ,  $SD = 0.33$ ), with the differences failing to achieve the level of significance. The male athletes further reached somewhat higher average total scores (differences below the level of significance) on the scale of their *perceived general success* (males:  $M = 4.31$ ,  $SD = 0.45$ ; females:  $M = 4.29$ ,  $SD = 0.61$ ). Regarding *expectations of*

*future success*, the female athletes' average scores were somewhat higher (although the differences were not significant) than the scores of the male athletes (males:  $M = 4.31$ ,  $SD = 0.61$ ; females:  $M = 4.44$ ,  $SD = 0.46$ ). The male athletes' average *attributions of success* were also lower (with differences below the level of significance) than the female athletes' with regard to the *effort* variable (males:  $M = 4.63$ ,  $SD = 0.41$ ; females:  $M = 4.72$ ,  $SD = 0.34$ ). Conversely, *ability* scores of the male athletes were somewhat higher than the reported ability scores of the female athletes (albeit the differences were not significant) (males:  $M = 4.35$ ,  $SD = 0.72$ ; females:  $M = 4.05$ ,  $SD = 0.62$ ). The total score for both the participating male and female athletes (combined scores) on the *effort attribution* variable ( $M = 4.66$ ,  $SD = 0.38$ ) was higher than the total score for the *ability attribution* variable ( $M = 4.25$ ,  $SD = 0.69$ ). Average values regarding athletes' *self-motivation*, i.e. their *internal motivation* obtained in our study, show that the female athletes reported being somewhat (although the differences were not significant) more *internally motivated* than the male athletes (males:  $M = 154.46$ ,  $SD = 21.75$ ; females:  $M = 156.26$ ,  $SD = 17.46$ ).

## DISCUSSION

The main aim of this study was to investigate selected psychological traits of Slovenian athletes who had attended the Beijing 2008 Olympic Games (OG) and to ascertain whether there were any gender differences with regard to those traits. According to our results, the participating athletes do have some clearly pronounced psychological traits. Yet significant differences or differences nearing significance (Table 1) between the male and female athletes for the examined 38 variables were only found with regard to self-confidence, masculinity and cognitive anxiety, impulsivity and somatic anxiety. The male athletes were significantly more self-confident and masculine than their female counterparts, who were significantly more cognitively anxious. A higher level of impulsivity was found in the male athletes (differences nearing significance) along with higher levels of somatic anxiety in the female athletes (differences likewise nearing significance). Differences between the male and female athletes were also found regarding the following variables: irritability, depression, dominance, guidance seeking, competitiveness, goal orientation, helplessness and attributing success to ability. Although only a few differences reached the level of significance, we should highlight that we found them relevant to our discussion and interpretation of the results due to the characteristics of our sample.

As some authors' findings testify (Tušak, 1997) there are no major differences in the personalities of top ranking athletes. In our study, significant differences ( $p < 0.05$ ) were only found with regard to *impulsivity* and *masculinity*. However, for Slovenian athletes who attended the Beijing 2008 Olympic Games the following traits were also found to be well above-average: impulsivity, calmness, extraversion, sociability and masculinity. For all of these dimensions, the male athletes' scores were higher than the average values found in the FPI 76 manual (Bele – Potočnik et al., 1984). For neuroticism, irritability, depression, dominance, sincerity, inhibitedness and emotional stability, the male athletes participating in our study obtained lower scores than the average typically found in the general population as seen from the norms in the FPI 76 manual. Average values in the FPI 76 manual are for calmness ( $M = 3.74$ ), extraversion ( $M = 3.26$ ), sociability ( $M = 3.63$ ), masculinity ( $M = 3.27$ ), neuroticism ( $M = 2.80$ ), irritability ( $M = 3.48$ ), depression ( $M = 3.25$ ), dominance ( $M = 2.26$ ), sincerity ( $M = 3.89$ ), inhibitedness ( $M = 3.26$ ) in emotional stability ( $M = 3.30$ ). Our results differ from the results reported by Tušak (1999); the author of that study compared basketball players (aged up to 20 years) with non-athletes and found the

athletes had higher irritability, dominance, extraversion and emotional stability scores. The difference in the results might be because the basketball players in the abovementioned study were younger (and were not top athletes). On the other hand, Tušak (1999) also reports findings showing Slovenian top ski-jumpers are more sociable, masculine, extraverted, dominant and emotionally stable than non-athletes (control group). The latter results are nearly identical to ours, except for dominance where for that dimension the results of the participants in our study were lower than the average results cited in the FPI manual. With regard to gender, Tušak et al. (2009) found higher levels of neuroticism in female athletes, which might make it harder for female athletes to control their emotions due to less emotional stability. Our results support their findings. The results of our study show gender differences in average neuroticism scores, although the differences are below the level of significance. It is however noted that neuroticism is higher in females not only in this study but also in the normal population. Further, Kolar and Strel (2004) found that boys (the study involved 10-, 12- and 14-year-old boys) tend to become more emotionally stable with age and obtain lower neuroticism scores. Tušak et al. (2009), on the other hand, also report female athletes as being more considerate, tolerant and understanding. According to the authors, female athletes tend to focus more on maintaining friendly relations and good communication, which is very important to them. The results of our study support the abovementioned findings as the female athletes' average scores were somewhat higher in the following dimensions: calmness, openness, extraversion and sociability. Tušak et al. (2009) also found that female athletes are considerably less aggressive and dominant, shyer and more insecure in making decisions than male athletes. The results of our study support their findings as the male athletes' were on average more impulsive, dominant and masculine, i.e. they achieved higher scores on three of the traits typically ascribed to males more than females. Compared to the results of previous studies (Tušak et al., 2009), our results on irritability and depression are somewhat surprising as the male athletes' averages were higher on the two dimensions in question. Significant differences between the male and female athletes were also found with regard to *cognitive anxiety* (with the female athletes being significantly more cognitively anxious than the male athletes) and *self-confidence* (with the male athletes being significantly more self-confident than the female athletes). Differences between the male and female athletes nearing the level of significance were also found with regard to the athletes' *somatic anxiety* (the female athletes' reached a higher average result, with difference close to the level of significance). Similarly to our findings, Tušak et al. (2009) report lower levels of active engagement and self-confidence in women, which could explain why female athletes are less competitive and more prone to feelings of anxiety. The results of our study support those findings as the male athletes in our study were significantly more self-confident and less anxious than their female counterparts. Moreover, the female athletes in our study obtained higher scores for the dimensions of helplessness (feelings of helplessness and resignation) and seeking support (measuring behavioural attempts at gathering information, seeking guidance and support). In their study on competitive state self-confidence and state somatic and cognitive anxiety conducted on 96 athletes studying at a university in the USA, Zeng et al. (2008) report that athletes with a higher state of cognitive anxiety usually also have a higher state of somatic anxiety and lower self-confidence. Our results seem to lead to similar conclusions as the male and female athletes' results were significantly higher in the two dimensions – as mentioned above, the male athletes were significantly more self-confident and significantly less cognitively anxious than the female athletes. Hardy, Jones and Gould (1996) believe that self-confidence could also be a shield top athletes use to avoid threatening interpretations of symptoms. Self-confidence can mediate the relationship between

the intensity of symptoms occurring before competition and the direction of athletes' interpretation of their athletic performance. Hardy (1990) reports that a higher cognitive anxiety can jeopardise the optimal competitive performance in conditions of high physiological excitement. However, self-confidence may moderate the influence of cognitive anxiety and psychological excitement on athletes' competitive performance. More precisely, self-confidence increases the likelihood of athletes with higher anxiety levels experiencing higher levels of excitement before competition. Self-confidence thus leads to athletes with higher anxiety levels being able to cope with the heightened excitement before a competition without the excitement influencing their athletic performance (Hardy, 1990). Athletes who are both highly anxious and highly self-confident are still able to perform well, whereas high anxiety combined with low self-confidence will generally result in a poorer competitive performance (Tušak & Faganel, 2004). Regarding satisfaction, the differences in the male and female athletes' total satisfaction scores (includes the athletes' satisfaction with the financial and organisational support of the Slovenian Olympic Committee and the support of the national sports' association for their sport discipline, satisfaction with one's performance and competition results, attendance at competitions and participation in sports, their trainer and their training programme, as well as training possibilities) were small and not significant. The female athletes had a slightly higher average result. The athletes participating in our research tend to attribute their success more to their efforts than to their abilities. A gender comparison reveals that the latter is especially true for the female athletes, while the male athletes attribute their success slightly more to their abilities. Similar results regarding attributing success to one's efforts vs. one's abilities were obtained by Tušak (1997), who confirmed that both top athletes and young athletes attribute their success to their efforts more than to their abilities. In addition, both the male and female athletes in our study had high self-efficacy and high success expectation scores. They were also found to be highly competitive. Competitiveness scores were high for all the athletes, with the male athletes' scores being higher (the differences nearing the 5% significance level) than the average result for the competitiveness variable. Gill (1988) points out that competitiveness can be seen as an indicator of a basic performance orientation in competitive sports. It depends on the level of the individual's engagement in sports. After similarly examining athletes' competitiveness with the SOQ questionnaire, Tušak (1997) found no significant differences in competitiveness between younger and the highest-ranking athletes – all participants had high competitiveness scores, as was the case in the present study. Further, the results of previous studies (Tušak, 1997) show that younger athletes are more goal-oriented and pay more attention to their efforts and performance, while older (top) athletes are more win-oriented. This comes as no surprise as top athletes are expected to win and thus their orientation is directed towards winning. The results of our study reveal high levels of both goal and win orientation, but differ from Tušak's finding (1997) since the athletes in our study reported a slightly lower win orientation and a slightly higher goal orientation. Compared to the male athletes, the females were more goal-oriented (the difference nearing the level of significance). This can also be linked to the results regarding attributing success to their efforts more than to their abilities. The female athletes in our study were thus more goal- and performance-oriented than win-oriented and attributed their success to their efforts more than to their abilities, while the male athletes conversely attributed their success more to their abilities and were more competitive, more self-confident and win-oriented. Finally, in his study Tušak (1997) found that the self-motivation of top athletes was higher than of young athletes. Yet his findings contradict the findings of Wankel and Kreisel (1985), who report higher external motivation in top athletes, while their self-motivation is supposed to comprise

strong internal incentives. However, the results of our study show high levels of internal motivation in all participating athletes.

The study has shown no major differences between the highest ranked top athletes in the studied psychological variables according to gender. Statistically significant differences between the male and female athletes were found only with regard to psychological characteristics generally considered to be more typically male (masculinity, self-confidence and impulsivity) and characteristics more typically found in women (cognitive and somatic anxiety). Differences between the male and female athletes were also found on a number of other variables (irritability, depression, dominance, seeking guidance, competitiveness, goal orientation, helplessness, attributing success to ability), although those differences were not statistically significant, which is most likely due to the small size of the entire sample ( $n=56$ ) and especially the female subsample ( $n=19$ ). That is why all of the above listed differences can be considered significant, as our sample captured nearly the entire population ( $n=62$ ) of Slovenian top athletes who participated in the Olympic Games. The results of our study confirm other authors' findings about there being no major differences according to gender among top athletes. On the other hand, a distinct psychological profile and behavioural determinants were found to be characteristic of the participating athletes compared to the general population and less successful athletes. We believe the findings of this study significantly contribute to the understanding of the psychological traits of Olympians and therefore allow for better and more gender-specific psychological preparation for the Olympic Games. Considering differences found between top male and female athletes, it would be especially appealing for future research to examine the relationship between cognitive state anxiety, somatic state anxiety and self-confidence on one hand and competitive success on the other.

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