ORIGINAL ARTICLE
SCIENCE OF MARTIAL ARTS

Personality and the nutritional habits of athletes using the example of the Polish national youth female wrestling team

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Manuscript Preparation
E Funds Collection

Paweł Piepiora[ABCD], Magdalena Superson[ABCD], Kazimierz Witkowski[ABCDE]

Faculty of Sports Science, University School of Physical Education in Wroclaw, Wroclaw, Poland

Received: 12 June 2017; **Accepted:** 02 November 2017; **Published online:** 27 December 2017

AoBID: 11680

ABSTRACT

Background & Study Aim: A diet has a direct impact on a person's body weight and is, therefore, very significant in combat sports, due to the existing division into weight categories. The purpose of this study was the relationship between specific personality traits and nutritional habits using the example of the Polish national youth female wrestling team.

Material & methods: The study consisted of a personality evaluation using the NEO-FFI questionnaire and a subjective evaluation of nutritional habits using a survey questionnaire (SAQ) developed by the authors of this article. Fifteen athletes from the Polish national youth female wrestling team participated in the study, while the comparative groups comprised 15 female volleyball players and 15 female tennis players. All the athletes were of a similar age (17 ±2 years) and represented a similar level of sport skills. Within each of the disciplines, after an analysis of the nutritional habits questionnaire, the athletes were divided into two groups: those paying attention to the quality of their nutrition (following a diet) and those who did not attach importance to their nutrition (following no diet).

Results: A lack of relationship between personality and nutritional habits in both the national youth wrestling team and the control groups. Correlations of the results obtained in NEO-FFI tests with SAQ are irrelevant. Neuroticism: wrestlers (20% high level, 73% a medium level, 7% a low level); volleyball players (respectively: 27-, 40-, 33%); tennis players (low in 100%). Extraversion: wrestlers (40% high level, 53% a medium level, 7% a low level); volleyball players (identically to wrestlers); tennis players (100% medium level). Openness to experience: wrestlers (67% a medium level; 33% a low level); volleyball players (7% a high level, 47% a medium level, 47% a low level); tennis players (100% medium level).

Conclusions: Research in this field may be very helpful, especially for combat sports athletes. The ability to maintain the optimum body weight, without the necessity of its drastic adjustments, during the pre-start period may have a significant impact on a person's results.

Keywords: agreeableness • conscientiousness • extraversion • NEO-FFI questionnaire • neuroticism • openness to experience • SAQ questionnaire • sport psychology

Copyright: © 2017 the Authors. Published by Archives of Budo Science of Martial Arts and Extreme Sports

Conflict of interest: Authors have declared that no competing interest exists

Ethical approval: The research was approved by the local Ethics Committee

Provenance & peer review: Not commissioned; externally peer reviewed

Source of support: Departmental sources

Author's address: Paweł Piepiora, Department of Martial Arts, Faculty of Sport Science, University School of Physical Education, Paderewskiego 35, 51-612 Wroclaw, Poland; email: pawel.piepiora@awf.wroc.pl

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non-commercial 4.0 International (http://creativecommons.org/licenses/by-nc/4.0/), which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, the use is non-commercial and is otherwise in compliance with the license.

Sports psychology – *noun* the scientific study of the mental state of sportspeople, looking at issues such as motivation, concentration, stress and self-confidence [21].

Sport psychology – is an interdisciplinary science that draws on knowledge from many related fields including biomechanics, physiology, kinesiology and psychology. It involves the study of how psychological factors affect performance and how participation in sport and exercise affect psychological and physical factors [22].

Habit – *noun* **1.** an action that is an automatic response to a stimulus **2.** a regular way of doing something [21].

Nutrition – *noun* **1.** the way in which food affects health **2.** the study of food [21].

INTRODUCTION

Personality is defined as a consistent pattern of behaviour and intrapersonal processes typical of a given individual. Personality research is fundamentally based on creating a pattern of regularity [1]. It concerns the thoughts, feelings and behaviours of an individual. The five-factor personality model (NEO-FFI) is currently the most popular concept describing personality in terms of its traits. It was presented in the most psychologically formalised manner by Costa and McCrae [2, 3] and includes the following five main factors: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. Each of the scales has 10 sten scores [4, 5] and results in the 1-3 sten score range may be regarded as low scores, 4-6 sten a medium level while those in the 7-10 range – as high scores.

Despite the possibility of errors and distortions, the "big five" model is currently regarded as the best tool available to psychology for evaluating personality [6-12]. A diet has a direct impact on a person's body weight and is, therefore, very significant in combat sports, due to the division into weight categories.

The purpose of this study was the relationship between specific personality traits and nutritional habits using the example of the Polish national youth female wrestling team.

MATERIAL AND METHODS

Participants

Fifteen athletes from the Polish national youth female wrestling team participated in the study, while the comparative groups comprised 15 female volleyball players and 15 female tennis players. All the athletes were of a similar age (17 ±2 years) and represented a similar level of sport skills. Within each of the disciplines, after an analysis of the nutritional habits questionnaire, the athletes were divided into two groups: those paying attention to the quality of their nutrition (following a diet) and those who did not attach importance to their nutrition (following no diet).

The study was conducted in Poland, in March 2016, at the Central Sports Centre in Szczyrk (Poland) and, in June 2016, in Gliwice (Poland) during the 90th Polish Tennis Championship.

Study design

The study consisted in a personality evaluation in five scales: neuroticism (NEU); extraversion (EXT); openness to experience (OTE); agreeableness (AGR); conscientiousness (CON); using the NEO-FFI questionnaire and a subjective evaluation of nutritional habits using a specially prepared survey questionnaire.

Statistical analysis

The statistical analysis was carried out using the Microsoft Excel 2010 program, which made it possible to perform a chi-squared test – at the intersection of the degrees of freedom (in the present study 2). Degrees of freedom: df = (r-1) * (c-1) r, c – number of levels of the variables for which the chi-square was calculated r = 3 (3 NEU, EXT, OTE, AGR, CON levels), c = 2 (diet, no diet) df = (3-1) * (2-1) = 2. The significance level adopted was 0.05. In order to verify the values obtained, the Yates's correction for continuity was applied.

RESULTS

Correlations of the results obtained in NEO-FFI tests with SAQ are irrelevant. The data are not dependent on SAQ, as they are not exposed to social approval.

Zero hypothesis: the level of a personality evaluation in five scales (NEU, EXT, OTE, AGR, CON) has no impact on all groups of athletes nutritional habits. Alternative hypothesis: the level of NEU, EXT, OTE, AGR, CON has an impact on the tall groups of athletes nutritional habits.

Neuroticism

The study revealed that 73% of the wrestlers exhibited a medium level of NEU. It showed a high level of NEU in 20% of the wrestlers and a low level in 7% of them (one of the fifteen athletes). The level of NEU in the volleyball players was more varied than in the case of the wrestlers: 33% of the players exhibited a low level of NEU, 40% a medium level and 27% a high level. The low level of NEU was in 100% of the tennis players – in this regard, they were the most uniform group (Table 1).

The theoretical value amounts to 5.99 (theoretical, i.e. expected, values for the level of NEU in female athletes tested in comparison to nutritional habits there are presents in Table 2). Thies

Table 1. Actual values for the level of neuroticism (NEU) in female athletes tested in comparison to nutritional habits.

NEU sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	1	0	1	4	1	5	7	8	15
4-6	6	5	11	3	3	6	0	0	0
7-10	3	0	3	2	2	4	0	0	0
Total	10	5	15	9	6	15	7	8	15

Table 2. Theoretical (expected) values for the level of extraversion (NEU) in female athletes tested in comparison to nutritional habits.

EXT sten scores	Wrestlers (n = 15)		Volleyball (n = 15)		Tennis (n = 15)	
	follows		follows		follows	
	a diet	no diet	a diet	no diet	a diet	no diet
1-3	0.67	0.33	3.00	2.00	7.00	8.00
4-6	7.33	3.67	3.60	2.40	0.00	0.00
7-10	2.00	1	2.40	1.60	0.00	0.00

Table 3. Chi-square statistics for the level of neuroticism (NEU) in female athletes tested in comparison to nutritional habits.

NEU sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0.17	0.33	0.50	0.33	0.50	0.83	0.00	0.00	0.00
4-6	0.24	0.48	0.73	0.10	0.15	0.25	0.00	0.00	0.00
7-10	0.50	1.00	1.50	0.07	0.10	0.17	0.00	0.00	0.00
Total	0.91	1.82	2.73	0.50	0.75	1.25	0.00	0.00	0.00

indicator for wrestlers is 2.73, for volleyball players is 1.25, and for tennis players, 0.00, i.e. that theoretical value (<5.99) is higher than the calculated value (Table 3). Hence, there is no statistically relevant relationship between the variables (the level of NEU in all groups of athletes and following a diet). The Yates's correction – the total score was 5.15 for wrestlers', 1.89 for volleyball players,0.00 for tennis players. The correction did not alter the result.

Extraversion

The study revealed that 53% of the wrestlers had a medium level of EXT, a high level was exhibited by 40% and a low level – by 7% of them (one of the fifteen athletes). While 53% of the volleyball players exhibited a medium level of extraversion, 40% – a high level and 7% a low level The medium level of EXT was in 100% of the tennis players – in this regard, they were the most uniform group (Table 4).

The theoretical value amounts to 5.99 (theoretical, i.e. expected, values for the level of EXT in female athletes tested in comparison to nutritional habits there are presents in Table 5). Thies indicator for wrestlers is 4.31, for volleyball players is 2.50 and for tennis players 0.00, i.e. that theoretical value (<5.99) is higher than the calculated value (Table 6). Hence, there is no statistically relevant relationship between the variables (the level of EXT in the all groups of athletes and following a diet). The Yates's correction – the total score was: 4.83 for wrestlers'; 3.39 for volleyball

Table 4. Actual values for the level of extraversion (EXT) in female athletes tested in comparison to nutritional habits.

EXT sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0	1	1	0	1	1	0	0	0
4-6	7	1	8	6	2	8	7	8	15
7-10	3	3	6	3	3	6	0	0	0
Total	10	5	15	9	6	15	7	8	15

Table 5. Theoretical (expected) values for the level of extraversion (EXT) in female athletes tested in comparison to nutritional habits.

EXT sten scores	Wrestlers (n = 15)		Volleyball (n = 15)		Tennis (n = 15)	
	follows		follows		follows	
	a diet	no diet	a diet	no diet	a diet	no diet
1-3	0.67	0.33	0.60	0.40	0.00	0.00
4-6	5.33	2.67	4.80	3.20	7.00	8.00
7-10	4.00	2.00	3.60	2.40	0.00	0.00

Table 6. Chi-square statistics for the level of extraversion (EXT) in female athletes tested in comparison to nutritional habits.

EXT sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0.67	1.33	2.00	0.60	0.90	1.50	0.00	0.00	0.00
4-6	0.52	1.04	1.56	0.30	0.45	0.75	0.00	0.00	0.00
7-10	0.25	0.50	0.75	0.10	0.15	0.25	0.00	0.00	0.00
Total	1.44	2.88	4.31	1.00	1.50	2.50	0.00	0.00	0.00

players; 0.00 for tennis players. The correction did not alter the result.

Openness to experience

The study revealed that 67% of the wrestlers had a medium level of OTE, a low level was exhibited by 33%, and no wrestler exhibited a high level of OTE. While 47% of the volleyball players exhibited a low level, also 47% a medium level and 7% a high level. The medium level of OTE was in 100% of the tennis players – in this regard, they were the most uniform group (Table 7).

The theoretical value amounts to 5.99 (theoretical, i.e. expected, values for the level of OTE in female athletes tested in comparison to nutritional habits there are presents in Table 8). Thies indicator for wrestlers is 2.40, for volleyball players is 1.90, and for tennis players, 0.00, i.e. that theoretical value (<5.99) is higher than the calculated value (Table 9). Hence, there is no statistically relevant relationship between the variables (the level of OTE in all groups of athletes and following a diet). The Yates's correction – the total score was: 2.54 for wrestlers'; 2.82 for volleyball players; 0.00 for tennis players. The correction did not alter the result.

Agreeableness

The study revealed that 60% of the wrestlers had a medium level of AGR, a high level by 27% and a low level – by 13%. While 47% of the volleyball players exhibited a medium level, 40% a high level and 13% a low level. The low level of OTE was in 100% of the tennis players – in this regard, they were the most uniform group (Table 10).

The theoretical value amounts to 5.99 (theoretical, i.e. expected, values for the level of AGR in

Table 7. Actual values for the level of openness to experience (OTE) in female athletes tested in comparison to nutritional habits.

OTE sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	2	3	5	4	3	7	0	0	0
4-6	8	2	10	5	2	7	7	8	15
7-10	0	0	0	0	1	1	0	0	0
Total	10	5	15	9	6	15	7	8	15

Table 8. Theoretical (expected) values for the level of openness to experience (OTE) in female athletes tested in comparison to nutritional habits.

OTE sten scores	Wrestlers (n = 15)		Volleyball (n = 15)		Tennis (n = 15)	
	follows		follows		follows	
	a diet	no diet	a diet	no diet	a diet	no diet
1-3	3.33	1.67	4.20	2.80	0.00	0.00
4-6	6.67	3.33	4.20	2.80	7.00	8.00
7-10	0.00	0.00	0.60	0.40	0.00	0.00

Table 9. Chi-square statistics for the level of openness to experience (OTE) in female athletes tested in comparison to nutritional habits.

OTE sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0.53	1.07	1.60	0.01	0.01	0.02	0.00	0.00	0.00
4-6	0.27	0.53	0.80	0.15	0.23	0.38	0.00	0.00	0.00
7-10	0.00	0.00	0.00	0.60	0.90	1.50	0.00	0.00	0.00
Total	0.80	1.60	2.40	0.76	1.14	1.90	0.00	0.00	0.00

female athletes tested in comparison to nutritional habits there are presents in Table 11). Thies indicator for wrestlers is 4.63, for volleyball players is 0.71, and for tennis players 0.00, i.e. that theoretical value (<5.99) is higher than the calculated value (Table 12). Hence, there is no statistically relevant relationship between the variables (the level of AGR in all groups of athletes and following a diet). The Yates's correction – the total score was: 5.64 for wrestlers'; 1.49 for volleyball players; 0.00 for tennis players. The correction did not alter the result.

Conscientiousness

The study revealed that 73% of the wrestlers had a high level of conscientiousness CON, a medium level was exhibited by 27% of the wrestlers, with no wrestler having a low level -While 67% of the volleyball players had a high level of CON, a medium level was exhibited by 27% and a low level by 7%. The high level of CON was in 100% of the tennis players – in this regard, they were the most uniform group (Table 13).

The theoretical value amounts to 5.99 (theoretical, i.e. expected, values for the level of CON in female athletes tested in comparison to nutritional habits there are presents in Table 14). Thies indicator for wrestlers is 0.17, for volleyball players is 0.83, and for tennis players, 0.00, i.e. that theoretical value (<5.99) is higher than the calculated value (Table 15). Hence, there is no statistically relevant relationship between the variables (the level of CON in all groups of athletes and following a diet). The Yates's correction – the total score was: 0.63 for wrestlers'; 2.49 for volleyball players; 0.00 for tennis players. The correction did not alter the result.

Table 10. Actual values for the level of agreeableness (AGR) in female athletes tested in comparison to nutritional habits.

AGR sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	2	0	2	1	1	2	7	8	15
4-6	7	2	9	5	2	7	0	0	0
7-10	1	3	4	3	3	6	0	0	0
Total	10	5	15	9	6	15	7	8	15

Table 11. Theoretical (expected) values for the level of agreeableness (AGR) in female athletes tested in comparison to nutritional habits.

AGR sten scores	Wrestlers (n = 15)		Volleyball (n = 15)		Tennis (n = 15)	
	follows		follows		follows	
	a diet	no diet	a diet	no diet	a diet	no diet
1-3	1.33	0.67	1.20	0.80	7.00	8.00
4-6	6.00	3.00	4.20	2.80	0.00	0.00
7-10	2.67	1.33	3.60	2.40	0.00	0.00

Table 12. Chi-square statistics for the level of agreeableness (AGR) in female athletes tested in comparison to nutritional habits.

AGR sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0.33	0.67	1.00	0.03	0.05	0.08	0.00	0.00	0.00
4-6	0.17	0.33	0.50	0.15	0.23	0.38	0.00	0.00	0.00
7-10	1.04	2.08	3.13	0.10	0.15	0.25	0.00	0.00	0.00
Total	1.54	3.08	4.63	0.29	0.43	0.71	0.00	0.00	0.00

DISCUSSION

Not much research has been performed to date on the relationship between personality and nutrition. In the case of physically inactive individuals, certain personality traits are associated with body weight. It has been proved that people who find it difficult to maintain a minimum body weight exhibit a high level of neuroticism. This may be related to a given person's proneness to experiencing phobias and anxiety [13]. Obese individuals are characterised by a low a level of conscientiousness. Body weight also increases with a rise in the level of impulsivity. On the other hand, the lack of a tendency to accumulate fat does not necessarily result from a conscientious observance of specific dietary principles [14], but rather from a behaviour consistent with natural nutritional habits that serve the body well under certain conditions [9, 15].

Studies have shown that people for whom reducing the amount of food eaten proves effective usually exhibit well-developed traits associated with conscientiousness as well as sociability and emotional stability [16].

The results of a study carried out on a group of 260 women living in Warsaw demonstrated that personality traits effect nutritional behaviour to various degrees. Persons with a low level of neuroticism tended to have more correct views on recommendations regarding the frequency of the consumption of certain products. Openness to experience correlated with preferences for high-sugar and high-fat products. Women with a high level of openness to experience consumed their meals more frequently and their diets were more varied. Conscientiousness was not directly or indirectly dependent on the views of the women

Table 13. Actual values for the level of conscientiousness (CON) in female athletes tested in comparison to nutritional habits.

CON sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0	0	0	1	0	1	0	0	0
4-6	3	1	4	2	2	4	0	0	0
7-10	7	4	11	6	4	10	7	8	15
Total	10	5	15	9	6	15	7	8	15

Table 14. Theoretical (expected) values for the level of conscientiousness (CON) in female athletes tested in comparison to nutritional habits.

CON sten scores	Wrestlers (n = 15)		Volleyball (n = 15)		Tennis (n = 15)	
	follows		follows		follows	
	a diet	no diet	a diet	no diet	a diet	no diet
1-3	0.00	0.00	0.60	0.40	0.00	0.00
4-6	2.67	1.33	2.40	1.60	0.00	0.00
7-10	7.33	3.67	6.00	4.00	7.00	8.00

Table 15. Chi-square statistics for the level of conscientiousness (CON) in female athletes tested in comparison to nutritional habits.

CON sten scores	Wrestlers (n = 15)			Volleyball (n = 15)			Tennis (n = 15)		
	follows		total	follows		total	follows		total
	a diet	no diet		a diet	no diet		a diet	no diet	
1-3	0.00	0.00	0.00	0.27	0.40	0.67	0.00	0.00	0.00
4-6	0.04	0.08	0.13	0.07	0.10	0.17	0.00	0.00	0.00
7-10	0.02	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.06	0.11	0.17	0.33	0.50	0.83	0.00	0.00	0.00

surveyed on recommended nutrition. The diet of highly extrovert women was more varied and had a higher energy value. The diet of women with a higher level of agreeableness was characterized by a greater variety and a moderate energy value [17]. Habits are among the most important aspects of nutrition [18]. The habits that are hardest to get rid of are those that are acquired unconsciously [19]. The behaviour of the training team may play a significant role in this aspect since, as has been proved, an individual learns most effectively from a person that they like or find attractive [20].

CONCLUSIONS

The study showed a lack of relationship between personality and nutritional habits. Research in this field may be helpful, especially for combat sports athletes. The ability to maintain the optimum body weight, without the necessity of its drastic adjustments, during the pre-start period may have a significant impact on a person's results.

REFERENCES

1. Burger JM. Personality. Crawfordsville: Wadsworth; 2000
2. Wiggins J. The Five-Factor model of personality. New York: The Guildford Press; 1996
3. Costa Jr P, McCrae R. Personality inventory Five Factor model test. In: Zawadzki B, Strelau J, Szczepaniak M et al., editors. NEO-FFI - Inwentarz Osobowości NEO-FFI. Warszawa: Pracownia Testów Psychologicznych; 2007 [in Polish]
4. Soto CJ, John OP, Gosling SD et al. The developmental psychometrics of Big Five self-reports: acquiescence, factor structure, coherence, and differentiation from ages 10 to 20. J Pers Soc Psychol 2008; 94(4): 718-737

5. Litwiniuk A, Daniluk A, Cynarski W J et al. Structure of personality of person training ju-jitsu and wrestling. Arch Budo 2009; 5: 139-141
6. Eysenck HJ. Keane M. Cognitive psychology. Hove: LEA; 1995
7. Jarvis M. Sport Psychology. London: Routledge Modular Psychology; 1999
8. McCrae R, Costa Jr P. Personality in Adulthood: A Five-Factor theory perspective. New York: Guilford Press; 2003
9. Aidman E, Schofield G. Personality and Individual Differences in Sport. Milton: Wiley; 2004
10. Robbins S, Judge T. Organizational Behavior. London: Prentise Hall; 2008
11. Shrivastaval P, Gopal R, Singh Y. A Study of Personality Dimensions in Sports Performance. J Exerc Sci Physiother 2010; 1: 39-42
12. Zimbardo P, Johnson RL, McCann Hamilton V. Psychology: Core Concepts. 7th ed. Singapore :Pearson Education South Asia Pte Ltd.; 2015
13. Elfhag K, Morey LC. Personality traits and eating behavior in the obese: poor self-control in emotional and external eating but personality assets in restrained eating. Eat Behav 2008; 9(3): 285-293
14. Bäckmand H, Kaprio J, Kujala U et al. Personality and mood of former elite athletes: a descriptive study. Int J Sports Med 2003; 22(3): 215-221
15. McKelvie SJ, Lemieux P, Stout D. Extraversion and neuroticism in contact athletes, no contact athletes and non-athletes: a research note. J Sport Psychol 2003; 5(3): 19-27
16. Munro IA. Using personality as a predictor diet induced wight loss and weight management. Int J Behav Nutr Phy 2011; 8(1): 1-9
17. Pilska M, Jeżewska-Zychowicz M. Psychologia żywienia: wybrane zagadnienia. Warszawa: Szkoła Główna Gospodarstwa Wiejskiego; 2008 [in Polish]
18. Cooper L. Jedz inaczej - dlaczego jemy to, co jemy? Kraków: Znak literanova; 2016 [in Polish]
19. Wansink B. Review: From mindless eating to mindlessly eating better. Physiol Behav 2010; 100(5): 454-463
20. Hendy HM, Raudenbush B. Effectiveness teacher modeling to encourage food acceptance in preschool children. Appetite 2000; 34(1): 61-76
21. Dictionary of Sport and Exercise Science. Over 5,000 Terms Clearly Defined. London: A & B Black; 2006
22. Weinberg RS, Gould D. Foundations of Sport and Exercise Psychology. Champaign, IL: Human Kinetics; 2010

Cite this article as: Piepiora P, Superson M, Witkowski K. Personality and the nutritional habits of athletes using the example of the Polish national youth female wrestling team. Arch Budo Sci Martial Art Extreme Sport 2017; 13: 103-110