ORIGINAL ARTICLE

Personality profile of combat sports champions against neo-gladiators

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

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Abstract

Background and Study Aim: The problem, which has long been the area of interest of sport psychologists, trainers and athletes, concerns the determination of the personality factors of the master in sport. This specific task would have to be to determine the personality traits of athletes that are necessary for their success in sport. It is accepted to assume that sport shapes the personality of athletes (players), and this is characteristic of specific sports disciplines. A new phenomenon is the acceptance by certain social circles of neo-gladiatorialism (an example of mix martial arts – MMA) and camouflaging this pathology as part of combat sports. The aim of the research is the personality profiles of combat sports champions and neo gladiators based on the methodological criteria of the Big Five model.

Material and Methods: Three hundred and thirty fighters (30 men in each sample) from 11 combat sports disciplines and 30 neo-gladiators (MMA) took part in the study, There are 45 champions in this population with significant sporting achievements (medallists of the World Championships, European Championships etc.) and 4 neo-gladiators (the winners of prestigious international tournaments). The age of the respondents is between 20 and 29 years of age. The research used the NEO-FFI Personality Questionnaire.

Results: Statistically significant differences between combat sports athletes disciplines in the dimensions of neuroticism, extraversion, agreeableness and conscientiousness were demonstrated. In each sport discipline a slightly different intensity of personality dimensions was found and the dominant dimension was different. There were deviations from the personality profile of the Brazilian ju jitsu athletes from the athletes of other combat sports athletes. The profile of neo gladiators did not differ from most athletes. In addition, there were differences between champions and other fighters. There were differences in the factors of neuroticism, extraversion, openness to experience and conscientiousness.

Conclusions: Combat sports athletes are distinguished by personality profiles specific to the sport they train. The personality profile of combat sports champions (in general) is significantly different in four personality dimensions in relation to the rest of martial arts adepts.

Keywords: Big Five model • martial arts • master • sports experience

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INTRODUCTION

The problem, which has long been the area of interest of sport psychologists, trainers and athletes, concerns the determination of the personality factors of the master in sport. This specific task would have to be to determine the personality traits of athletes that are necessary for their success in sport.

Personality traits are adequate to the specifics of the sport discipline being trained, its goals and challenges. Personality profiles of athletes are at similar levels – low neuroticism, high extraversion and diligence, average openness to experience and diligence; but not the same at the same time. Among athletes, it is extremely difficult to distinguish and determine the most-favorable personality type, as the trained sport discipline had a great impact on it, and the personality determinants of the athletes depended on it. A relationship between personality traits and sports experience has also been demonstrated – the longer and greater the sports experience, the clearer the "sporting" personality of the studied populations. Therefore, it can be presumed that sport shapes the personality of athletes (players), and this is characteristic of specific sports disciplines [1-3].

In the field of combat sports, Horbulewicz [4] showed that emotional stability has a significant impact on the bravery of judokas and may translate into combat effectiveness. Also Żyto-Sitkiewicz [5] studied judo players and wrestling in free style and found no statistically significant differences in personality components between the tested samples [5]. And the research of Siek et al. [6] shows that advanced and beginner karate athletes differed statistically significantly in terms of anxiety as a personality trait. In turn, Poczwardowski and Makurat (1993) [7] in their research on judokas did not establish any personality traits for championship level players. In another study by Botwina (2004) [8] he showed that wrestlers were characterized by higher activity, extraversion and neuroticism than the players of team sports games. In addition, it has been shown Bernatek et al. [9] that combat sports athletes and team sports players differ significantly in those personality traits that are biologically determined to the greatest extent, suggesting that there is natural selection at the recruitment stage. Wcisło [10] proved that kickboxing training can have a positive impact on the development of an individual's personality. The greatest impact was noted in the volitional and physical sphere, then in the socio-moral sphere, and the smallest in the emotional sphere. An interesting work was presented by Fuller [11]. The results of research on the personality, views and behavior of martial arts masters generally indicate the positive psychological effects of mental training. The psychological aspects of aikido art were presented as an example of a moderator of a model personality (low neuroticism, other features at a high level) and the future application of martial arts principles as systemic or supportive therapy was considered [11].

In the avant-garde study of Binboga et al. [12] they checked the relationship between psychophysiological excitement, cognitive anxiety and personality traits in young taekwondo athletes. It was found that especially agreeableness and neuroticism can be useful in understanding the stimulus response to competition [12]. In addition, Unrug and Malesza [13] tested athletes Muay Thai, kickboxing, Brazilian jiu jitsu, kravmagai and MMA training amateur and competitive. It was shown that martial arts athletes showed a higher level of psychoticism and sensory sensitivity, and a lower intensity of extraversion than amateurs [13]. A year later, Tomczak et al. [14] presented a combination of personality and different styles of coping with stress in wrestlers from the Polish national team of cadets. Wrestlers were characterized by low neuroticism and openness to experience, as well as high extraversion and conscientiousness in comparison with the general population, and were characterized by a style of coping with emotions [14]. Also Boostani et al. [15] assigned a significant role of personality in the mental takeover of the initiative in combat sports on the example of karate.

Directional tests using the NEO-FFI method in a karate environment were carried out by Piepiora with his team [16-18]. It was shown that the personality of karatekas was dependent on the style trained. Thus, personality may be conditioned by the specificity of the sport discipline being trained. Then the results of all karate masters were compared with the rest of the kumite fighters. Masters had a significantly lower neuroticism index and higher remaining personality dimensions in relation to the rest of the respondents [19]. In addition, it was prove that the highest negative indicators of personality traits were recorded in contact combat sports. Martial arts that prefer relatively moderate martial

Athlete – ***noun*** **1.** someone who has the abilities necessary for participating in physical exercise, especially in competitive games and races **2.** a competitor in track or field events [50].

Player – ***noun*** someone taking part in a sport or game [50].

Combat sports – the group of sports disciplines, in which the gist of the competition is the direct clash of two competing athletes. They are affiliated to the national and international sports organizations in order to carry out official competition, classification, etc. [39].

Combat sport – ***noun*** a sport in which one person fights another, e.g. wrestling, boxing and the martial arts [50].

Muay Thai – ***noun*** a martial art that is a form of kickboxing, practised in Thailand and across Southeast Asia [50].

Neo-gladiator – a person who trains mix martial arts (MMA) and similar forms of hand-to-hand fighting that do not meet the definition of sport according to the Olympic Charter.

Self-defense – ***noun*** fighting techniques used for defending oneself against physical attack, especially unarmed combat techniques such as those used in many of the martial arts [50].

Physical activity – ***noun*** exercise and general movement that a person carries out as part of their day [50].

Częstochowa declaration 2015: HMA against MMA – "continuous improvement of health through martial arts as one of the most attractive form of physical activity for a human, accessible during entire life should constantly exist in public space, especially in electronic media, to balance permanent degradation of mental and social health by enhancing the promotion of mixed martial arts – contemporary, bloody gladiatorship, significant tool of education to aggression in a macro scale".

Gdansk 2nd HMA World Congress Resolution – **Article 1** The white flag with five interlocking "Olympic rings" is the most recognizable symbol in the global public

techniques, called "life sports," are recommended to effectively strengthen all health dimensions of survival [20]. Piepiora and Witkowski [21] answer the question: whether the personality of combat sports fighters at the championship level distinguishes them in some sense from other sportsmen (individual sports and games). Combat sports champions were characterized by statistically significantly lower level of neuroticism in relation to the champions of individual sports. According to the authors a utilitarian factor influence – psychomotor competences in the field of self-defense became apparent, characteristic only for combat sports.

Taking earlier reports as a starting point that the personality determinants of success in sport, according to the Big Five model [22], are probably lower neuroticism and higher extraversion, openness to experience, agreeableness and conscientiousness in sport masters in relation to the population of unsuccessful athletes, it was considered that it should be verified how these personality traits evolved in combat sports masters.

The problem of the research was the attempt to determine the personality profiles of combat sports athletes in five-factor Big Five terms. On this basis, the personality profile of martial arts champions – who have achieved significant success in competition in relation to other combat sports athletes – was generated.

The aim of the research is the personality profiles of combat sports masters and neo gladiators based on the methodological criteria of the Big Five model.

MATERIAL AND METHODS

Test persons

The subjects of the study were combat sports athletes selected at random from the Polish population of athletes professionally connected with club contracts or who are on a pay-off in uniformed services; athletes training and competing competitively; athletes – students of the University of Physical Education in Wroclaw

The basic criteria for the selection of non-random purposeful respondents were the voluntary willingness to participate in the study, the respondents had to be of senior age (between 20 and 29 years old) and had to have at least a second or higher sports class. Other selection criteria were many years of sports experience – three years and more, current competitor license, impeccable coach opinion, documented sport achievements at various levels of competition (national, continental, global).

A total of 360 athletes from the following disciplines (each sample of 30): Brazilian Jiu-Jitsu (BJJ), Judo (JUD), Ju-jitsu (JJT), Karate Kyokushin (KKS), Olympic Karate (WKF), Karate Oyama (KOY), karate shidokan (KSD), karate shotokan (KSH), kickboxing (KBX), stylish taekwondo (ITF), free style wrestling (ZAP) and neo-gladiators group (MMA).

This block contains 45 champions with significant sports achievements: Brazilian jiu jitsu 4; judo 3; ju jitsu 5; karate kyokushin 6; Olympic karate 1; karate Oyama 4; karate shidokan 5; karate shotokan 6; kickboxing 4; stylish taekwondo 5; free style wrestling 2 and 4 neo-gladiators. The combat sports champions were medalists of the World Championships, European Championships, World Cup, European Cup, World Games 2017 etc. and 4 neo-gladiators winners of prestigious international tournaments.

Study design

The research used the NEO-FFI Personality Questionnaire. The selection criterion was dictated by: the location of NEO-FFI in the theoretical model and the relatively large methodological formalization compared to other approaches developed under the five-factor personality model; good psychometric characteristics; extensive factual documentation of the measurement accuracy for the factors of the original version, which suggests that this inventory may be useful in scientific and practical research; acceptable working time for athletes with the questionnaire.

The NEO-FFI Personality Questionnaire items are made up of five measuring scales, factors of the Big Five model. They are marked with abbreviations formed from the first letters of the English factor names: neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A), conscientiousness (C). The items in the questionnaire are 60 self-descriptive statements, the truthfulness of which in relation to themselves was rated by the respondents on a five-point scale: 1 "definitely not"; 2 "rather not", 3 "I have no opinion"; 4 "rather yes"; 5 "definitely yes" [23].

space. Neither did the resurrected idea of Olympia, "***Citius, Altius, Fortius***" save humanity from the horrors of two world wars, nor did the declared mission of the International Olympic Committee (IOC): "1. (...) the promotion of ethics and (...) ensuring that, in sport, the spirit of fair play prevails and violence is banned" (Olympic Charter, p. 18) stop the pathology of permanently educating contemporary man in aggression.
Article 2 Likewise, symbols (a sword pointed downwards surrounded by five rings) and motto ("Friendship through Sport") of Conseil International du Sport Militaire (CISM) did not stop soldiers from killing each other and murdering people after 1948 (the year of establishing CISM, the second largest multi-sport discipline organization after the IOC, and also the year of the Universal Declaration of Human Rights).
Article 3 Although there are five identical combat sports in the Olympic Games and the Military World Games, their potential is still not used to meet the second of the Fundamental Principles of Olympism: "(...) to place sport at the service of the harmonious development of humankind, with a view to promoting a peaceful society concerned with the preservation of human dignity" (Olympic Charter, p. 13).
Article 4 Boxing and wrestling cultivate the traditions of ancient Olympism. Judo and taekwondo have given martial arts humanistic and health attractiveness. Fencing combines this tradition with modernity in the spirit of chivalry. Aiming dynamic offensive and defensive actions directly at the opponent's body (irrespective of the protectors used) in such a way as not to hurt is a measure of respecting those knightly rules. This rule harmonizes with the principle of respect for the opponent's as well as one's own corporeality and dignity over the vain victory at all costs.
Article 5 For the civilized individual and the society for whom human health and dignity are the common good, participation, in any role, in brutal shows of people massacring each other cannot be a standard of the quality of life. Neo gladiatorship camouflaged under the banner of martial arts or combat sports is a slight to the Fundamental Principles of Olympism, but also to the Universal Declaration of Human Rights. Therefore, this

Resolution should inspire as many actors of Knowledge Society as possible jointly to oppose any deformations of the mission of Olympism and sport. The expansion of the pathology of unauthorized naming neo gladiators as combat sports athletes will soon turn the Fundamental Principles of Olympism into their own caricature – objective indicators are a testament to the devastation of all dimensions of health by the practice of legal bloody pageants [51].

The NEO-FFI Personality Questionnaire is internally compliant. Accuracy was demonstrated on the basis of research on the relationship between the results of the questionnaire and the evaluations of the subjects made by observers, the heritability of the measured traits and their correlation with other personality and temperament dimensions. Factor relevance was also verified. The results allow a full description of the respondents' personalities in a five-factor approach to the Big Five and forecast their adaptability to the professional environment [24].

Each tested person agreed to participate in the study after becoming familiar with the information on the objectives and principles of conducting, expected effects and possible benefits for the persons participating in the study. The respondents also familiarized themselves with the risk of submitting a query with the selection of the mode and the possibility of withdrawing from participation in the study in each of its phases. In addition, the respondents were informed that they were able to ask questions and get answers to them. All respondents agreed to the processing of data related to their participation in the study. The respondents had an hour of time to work with the NEO-FFI Personality Questionnaire. The research was carried out in groups of up to 30 people. After the research, the participants' data were coded.

The project received a positive opinion of the Senate Committee on Ethics of Scientific Research at the University of Physical Education in Wrocław (no 20/2019).

Assumptions to statistical analyses

Prior to testing the research questions posed, basic descriptive statistics were calculated for each sport discipline included in the study. It was decided not to calculate distribution normality tests for each personality trait in each discipline due to relatively small samples and multiple comparisons. Both of these factors could cause the conclusions drawn from the results of such tests to be incorrect. For this reason, in order to select further analyses, so-called thumb rule for skew value analysis. If the skewness value for a given variable is in the range of −2 to 2, then it can be considered that the distributions of these variables are not very asymmetrical, which in turn allows the use of parametric tests. For comparisons of differently classified data, the skewness values for the compared groups were checked before performing the analysis. Each time they were within the accepted range.

At the beginning, it was verified whether martial arts players differ in the intensity of individual personality traits. A number of one-way analyses of variance were carried out. For some measurements, the Welch correction for heterogeneity of variance was used. The indicators were estimated using the bootstrapping method with sampling set at 5,000 and 95% confidence intervals. However, in the case where the assumption of homogeneity of variance was broken, then Games-Howell tests were used in post-hoc analyses. And if the assumption of homogeneity of variance was maintained, then Tukey's tests were used. In addition, due to repeated comparisons within each sport category, it was decided to adopt the Bonferroni amendment for the level of significance. In each sport category, 5 one-way analysis of variance was performed, and a new level of statistical significance for the analysis of variance was calculated at $\alpha = 0.01$.

In order to answer the research questions posed and verify the research problem, statistical analyses were performed using IBM SPSS Statistics version 25. Software was used to analyse basic descriptive statistics, a series of one-factor analysis of variance, Student's t tests for independent samples and a logistic regression model. The level of significance was $\alpha = 0.05$.

The estimation of the results is based on the following indicators: mean (M); median (Me); standard deviation (SD or ±); distribution, F-Snedecor statistics, result of the analysis of variance (*F*); average absolute deviation (d); degrees of freedom (*df*);significance level, probability (*p*); the significance level α is the threshold for *p* below which the null hypothesis is rejected even though by assumption it were true, and something else is going on (α); η2 is calculated from the sum of squares (SS) between groups divided by the total SS (SSbetween/SStotal = η2); skewness (g1); kurtosis (g2); Student's *t*-distribution (t).

RESULTS

The results of the analyses for martial arts athletes and practicing MMA showed statistically significant differences between the disciplines in neuroticism, extraversion, agreeableness and

conscientiousness. However, differences in openness to experience were not statistically significant. The strongest effect was observed in the measures of agreeableness, where differences between groups explained about 24% of the variance of the dependent variable. The effects for the remaining, statistically significant differences explained about 10-11% of variability in the analysed data.

Post-hoc analyses for the dimension of neuroticism showed that Olympic karate (WKF) athletes had a significantly lower level of neuroticism than Brazilian jiu jitsu (BJJ), stylish taekwondo (ITF), ju jitsu (JJT), kickboxing (KBX), karate kyokushin (KKS), karate Oyama (KOY), karate shotokan (KSH), free style wrestling (ZAP) and neo-gladiators (MMA). Other differences in neuroticism were not statistically significant.

The results of pair-wise comparisons for extraversion showed that athletes of Brazilian jiu jitsu (BJJ) showed significantly lower level of extraversion than athletes of ju jitsu (JJT), judo (JUD) and kickboxing (KBX). The athletes of Brazilian jiu jitsu (BJJ) also had a significantly lower level of agreeableness than combat sports athletes of all other disciplines. In addition, a significantly lower level of conscientiousness was observed among athletes of Brazilian jiu jitsu (BJJ) compared to representatives of ju jitsu (JJT), judo (JUD), Olympic karate (WKF) and neo-gladiators (MMA). Free style wrestlers (ZAP) also had a lower level of conscientiousness than judo fighters (JUD). Detailed values of the coefficients of analysis of variance are presented in Table 1, and the levels of significance of post-hoc tests in Tables 2-5. The whole is illustrated in Figure 1.

Significant differences were observed in the dimensions: neuroticism, extraversion, openness to experience and conscientiousness. The effect size, measured using Cohen's d, observed differences was very strong (d>1.5) for neuroticism, strong for conscientiousness (0.8<d <1.5) and moderately strong (0.5<d<0.8) for extraversion and openness to experience. Masters of combat sports were characterized by lower neuroticism, a higher level of extraversion, openness to experience and conscientiousness in relation to other persons (the exact results in Table 6 and Figure 2).

Table 1. Analysis of differences between individual combat sports disciplines for individual personality traits – one-way analysis of variance.

Disciplines	Personality traits									
	N		E		O		A		C	
	M	SD	M	SD	M	SD	M	SD	M	SD
BJJ (n = 30)	16.03	6.79	28.20	5.91	28.37	7.08	18.63	3.90	31.23	5.55
ITF (n = 30)	13.17	5.70	31.57	5.49	25.03	7.02	29.17	6.40	34.33	5.68
JJT (n = 30)	15.40	6.25	33.77	4.82	24.37	5.50	26.43	6.17	36.90	3.28
JUD (n = 30)	11.90	5.68	32.83	4.69	26.77	4.74	29.67	5.53	38.87	6.77
KBX (n = 30)	13.93	5.20	33.03	6.71	25.87	7.21	26.93	5.66	36.00	3.82
KKS (n = 30)	12.97	4.99	32.33	4.82	25.33	5.73	28.83	6.04	35.47	7.75
KOY (n = 30)	13.83	5.99	28.83	6.17	27.43	6.02	28.40	4.91	35.03	7.28
KSD (n = 30)	12.23	5.79	31.33	4.45	27.03	6.02	31.23	5.55	35.57	6.39
KSH (n = 30)	13.39	5.56	31.58	5.29	27.06	6.98	30.13	6.23	35.19	6.91
WKF (n = 30)	8.93	2.59	32.60	3.83	26.60	6.36	29.30	5.68	37.30	4.34
ZAP (n = 30)	15.53	3.65	32.30	4.91	26.07	3.32	27.27	4.94	32.97	4.97
F	8.54*		3.36		1.26		9.78		3.50	
Df	11; 137.38		11; 349		11; 349		11; 349		11; 349	
P	**<0.001**		**<0.001**		**0.248**		**<0.001**		**<0.001**	
η^2	0.11		0.10		0.04		0.24		0.10	

* *correction for heterogeneity of variance*

Table 2. Significance levels for post-hoc comparisons using the Games-Howell method for neuroticism.

Disciplines	1	2	3	4	5	6	7	8	9	10	11
1.BJJ	---										
2.ITF	0.826	---									
3.JJT	1.000	0.949	---								
4.JUD	0.328	0.999	0.509	---							
5.KBX	0.969	1.000	0.997	0.949	---						
6.KKS	0.696	1.000	0.876	1.000	1.000	---					
7.KOY	0.971	1.000	0.997	0.978	1.000	1.000	---				
8.KSD	0.467	1.000	0.668	1.000	0.987	1.000	0.996	---			
9.KSH	0.877	1.000	0.972	0.996	1.000	1.000	1.000	1.000	---		
10.MMA	0.79	1.000	0.932	0.993	1.000	1.000	1.000	0.999	1.000	---	
11.WKF	**0.001**	**0.027**	**0.001**	0.313	**0.001**	**0.014**	**0.009**	0.200	**0.011**	**0.001**	---
12.ZAP	1.000	0.745	1.000	0.157	0.963	0.508	0.971	0.287	0.817	0.575	**0.001**

Table 3. Significance levels for Tukey's post-hoc comparisons for extraversion.

Disciplines	1	2	3	4	5	6	7	8	9	10	11
1.BJJ	---										
2.ITF	0.346	---									
3.JJT	**0.003**	0.897	---								
4.JUD	**0.032**	0.999	1.000	---							
5.KBX	**0.020**	0.995	1.000	1.000	---						
6.KKS	0.095	1.000	0.996	1.000	1.000	---					
7.KOY	1.000	0.675	0.015	0.123	0.083	0.287	---				
8.KSD	0.462	1.000	0.815	0.994	0.983	1.000	0.787	---			
9.KSH	0.327	1.000	0.895	0.999	0.995	1.000	0.656	1.000	---		
10.MMA	0.997	0.944	0.083	0.394	0.301	0.658	1.000	0.977	0.938	---	
11.WKF	**0.054**	1.000	0.999	1.000	1.000	1.000	0.188	0.999	1.000	0.515	---
12.ZAP	0.102	1.000	0.995	1.000	1.000	1.000	0.301	1.000	1.000	0.675	1.000

Table 4. Significance levels for Tukey's post-hoc comparisons for agreeableness.

Disciplines	1	2	3	4	5	6	7	8	9	10	11
1.BJJ	---										
2.ITF	**0.001**	---									
3.JJT	**0.001**	0.769	---								
4.JUD	**0.001**	1.000	0.531	---							
5.KBX	**0.001**	0.929	1.000	0.769	---						
6.KKS	**0.001**	1.000	0.888	1.000	0.978	---					
7.KOY	**0.001**	1.000	0.971	0.999	0.997	1.000	---				
8.KSD	**0.001**	0.958	0.048	0.995	0.124	0.888	0.725	---			
9.KSH	**0.001**	1.000	0.303	1.000	0.537	0.999	0.989	1.000	---		
10.MMA	**0.001**	1.000	0.995	0.992	1.000	1.000	1.000	0.531	0.946	---	
11.WKF	**0.001**	1.000	0.710	1.000	0.897	1.000	1.000	0.974	1.000	0.999	---
12.ZAP	**0.001**	0.978	1.000	0.888	1.000	0.995	1.000	0.215	0.701	1.000	0.963

Table 5. Significance levels for Tukey's post-hoc comparisons for conscientiousness.

Disciplines	1	2	3	4	5	6	7	8	9	10	11
1.BJJ	---										
2.ITF	0.661	---									
3.JJT	**0.011**	0.870	---								
4.JUD	**0.001**	0.115	0.979	---							
5.KBX	0.076	0.995	1.000	0.763	---						
6.KKS	0.187	1.000	0.999	0.518	1.000	---					
7.KOY	0.338	1.000	0.986	0.324	1.000	1.000	---				
8.KSD	0.160	1.000	0.999	0.566	1.000	1.000	1.000	---			
9.KSH	0.264	1.000	0.993	0.379	1.000	1.000	1.000	1.000	---		
10.MMA	**0.024**	0.947	1.000	0.935	1.000	1.000	0.997	1.000	0.999	---	
11.WKF	**0.004**	0.721	1.000	0.997	0.999	0.988	0.941	0.992	0.963	1.000	---
12.ZAP	0.992	0.999	0.285	0.006	0.691	0.889	0.969	0.860	0.945	0.425	0.160

Detailed descriptive statistics for each combat sport disciplines and MMA along with codification and percentage amounts of champions and other athletes in given samples are presented in the Tables 7 to 18 in the annex.

DISCUSSION

Obtained research results allowed to solve the research problem. Differences in the intensity of individual personality traits of combat sports players were outlined. It was found that in the competitors of given martial arts athletes significantly differed in four dimensions: neuroticism, extraversion, agreeableness and conscientiousness. And the differences in openness to experience were not statistically significant. Namely: Olympic karate athletes had a significantly lower level of neuroticism than Brazilian jiu jitsu, stylish taekwondo, ju jitsu, kickboxing, karate kyokushin, karate Oyama, karate shotokan, free style wrestling and MMA. In addition, Brazilian jiu jitsu athletes showed a significantly lower level of

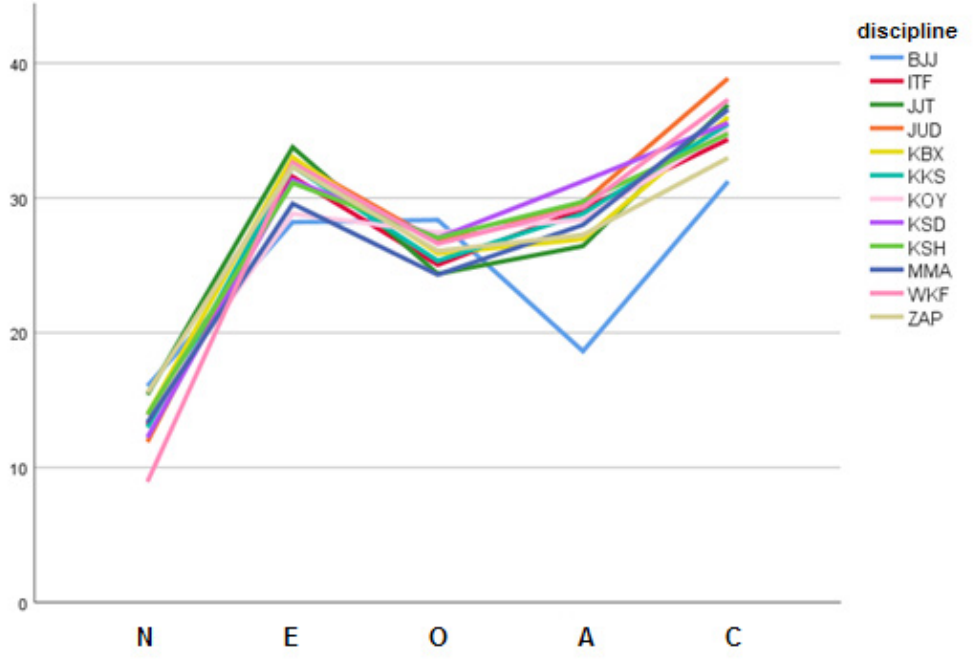

Figure 1. Line graph of personality profiles of combat sports athletes and neo gladiators (MMM).

Table 6. Analysis of differences between masters and other fighters in the intensity of individual personality traits.

Variable	Others (n = 311)		Masters (n = 49)				d Cohen's
	M	SD	M	SD	t	p	
Neuroticism*	14.75	4.60	4.73	2.31	23.83	**<0.001**	2.29
Extroversion	30.96	5.31	34.88	4.82	−4.85	**<0.001**	0.75
Openness to experience	25.74	6.12	29.06	5.74	−3.57	**<0.001**	0.55
Agreeableness	27.50	6.03	30.00	7.70	−2.59	0.031	0.40
Conscientiousness	34.70	5.89	40.22	5.14	−6.21	**<0.001**	0.95

**correction for heterogeneity of variance*

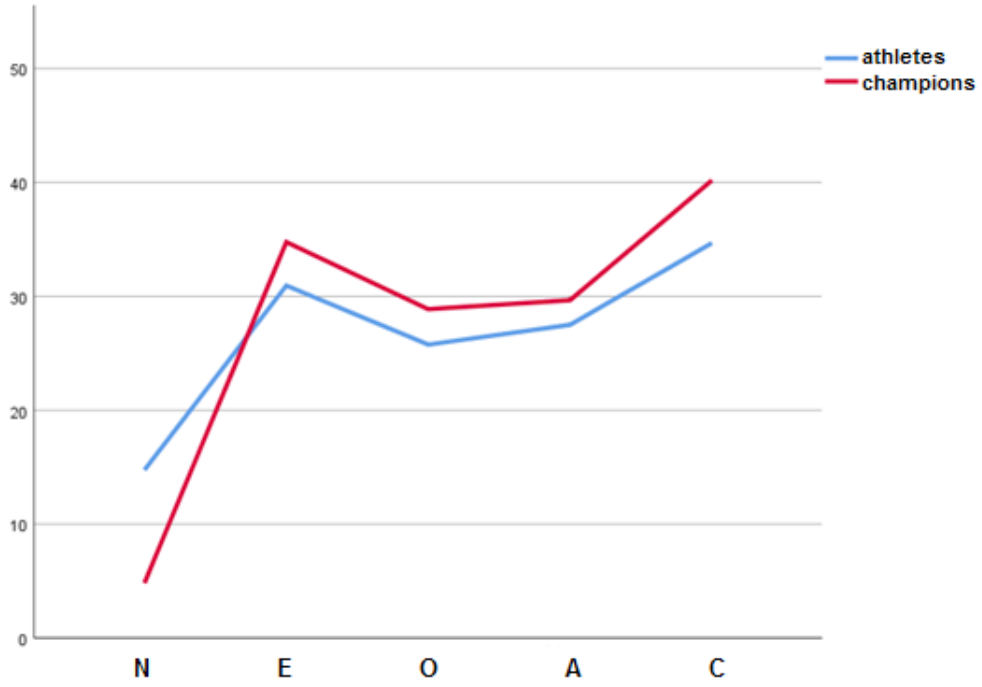

Figure 2. Line graph of personality profiles of champions and other athletes in the martial arts group.

extraversion than junior, judo and kickboxing athletes. In addition, representatives of Brazilian jiu jitsu also had a significantly lower level of agreeableness in relation to athletes of all other disciplines. In addition, there was also a significantly lower conscientiousness rate among Brazilian jiu jitsu athletes compared to ju jitsu, judo, Olympic karate athletes and neo-gladiators. Freestyle wrestlers also had a lower level of conscientiousness than judo fighters.

Data analysis clarifies that there are differences in the intensity of individual personality traits between martial arts disciplines except for openness to experience. This indicates that there are differences in the personality of athletes depending on the sport discipline being trained. The data obtained indicate significant impacts of sport on the personality formation of taxed players and confirm the reports of other authors. It is necessary to take into account the differences between athletes and non-athletes [25-27] and between athletes due to the trained sport discipline [28-34]. Indeed, the length of professional experience also influences the formation of players' personalities - the greater the professional experience, the more clearly the personality of athletes outlines [35, 36]. Research on the personality determinant of intentional behaviour in sport has been confirmed [37, 38]. Sport activity shapes personality and shaped personality traits have an impact on making solutions in the

starting situation. This should be associated with the specifics of sports competition and slightly different psychological requirements that sport disciplines set for athletes. Therefore, there were significant differences in four personality factors, and there were no dissonances in openness to experience. The essence of competition in combat sports lies in the direct clash of two competing athletes, where the methods of direct impact on the competitor's body are strictly defined in order to document their own advantage [39]. Hence the assumption that the lack of differences in openness to experience was revealed primarily in divergent thinking and creativity of combat sports athletes [23].

Since there is no knowledge about the personality of the surveyed athletes from earlier periods of their sports careers, there is no reason to conclude on how many years of sports training had an impact on any modifications to this important human property. In addition, it is not known to what extent the specificity of the sports disciplines trained, training and participation in sports competition could have a decisive impact on the personality of the athletes. Apart from the influence of the trainer and other players (athletes), the players' immediate social environment. But social and cultural factors cannot be excluded. Hence the positions of other researchers [40-42]. The strength of the coach's comprehensive influence on the athletes is of great importance here. The trainer is also a teacher but pursues slightly different goals than his school counterpart. The trainer, in his activity within physical culture, aims to maximize the juvenile's sporting achievements and to shape in him the properties conducive to developing resistance to assessing social perception and adaptation to significant training loads. In such a specific situation, the trainer as the sender – a significant person – should also have the appropriate characteristics to effectively achieve the set goals [43]. The commonality of goals and tasks, mutual attractiveness, compliance of attitudes and ethical norms, diversity and personality – developing the personality of the athlete by cultivating the personality of the athlete by strengthening his individuality, strengths, advantages, features and properties are beneficial for the trainer's cooperation with the player (athlete). The "trainer – player" system (relations) is essentially a conflict system and it can be a desirable situation, because conflict often promotes development, and its lack can cause stagnation [44]. The coach helps his athlete (player) draw on his own inspiration. However, sports level, learning and development can only be effective if the athlete assumes personal responsibility for the result.

In the second stage, champions were selected - players with significant sports successes, from other athletes, and their personality profiles were compiled. It was found that combat sports masters were distinguished by lower neuroticism, higher extraversion, openness to experience and diligence in relation to other fighters. On this basis, it can be presumed that such personality traits characterize all combats sports masters. This personality profile of sport champions – based on various methods and indicators [4-21] – confirmed earlier research reports and at the same time negated the research of Mirzaei et al. [45] that only high conscientiousness correlated with sport results.

The highest cognitive value at this stage of the study had the results of comparative analysis of champions with other players of various sports. It is an open question to determine whether the personality determinants of success in sport were shaped only in the course of many years of sports careers or at the beginning of the sports practice of athletes – champions were distinguished by: lower levels of neuroticism and a higher level of extraversion, openness to experience and conscientiousness in relation to other athletes. Therefore, the positions of other researchers cannot be excluded [46-49]. Factors disturbing or supporting the development of a young athlete creates his immediate surroundings. This, in turn, is expressed in self-assessment, which has a significant impact on the formation of personality and competence of talented athletes.

CONCLUSIONS

Data evaluation led to the following conclusions. There were differences in the intensity of individual personality traits between martial arts disciplines. The research results showed that there were differences in personality traits between athletes depending on the sports disciplines they trained. Namely: athletes were distinguished by personality profiles specific to the trained sport. Statistically significant differences between combat sports disciplines in the dimensions of neuroticism, extraversion, agreeableness and conscientiousness were demonstrated.

In each sport discipline a slightly different intensity of personality dimensions was found and the dominant dimension was different. It can therefore be assumed that in the sports activity of athletes from various sports disciplines, personality traits play a slightly different role. Differentiation in the level of intensity of personality dimensions should be associated with the specificity of sport competition in the studied sports disciplines.

In addition, there were differences between champions and other fighters. There were differences in the factors of neuroticism, extraversion, openness to experience and conscientiousness. The above-mentioned personality dimensions characterize combat sports masters. This confirms the idea about the significant impact of sport on human personality. The sports development of sportsmen without knowledge of the specific characteristics and personality structure of representatives of various combat sports disciplines will be an artificial and inefficient activity. Possible distinctiveness of neo-gladiators in the sense of a mentality that induces them to bloody fights, contradicting the ideals of fair play and the Olympic Charter, should be searched for using other psychological tools.

REFERENCES

1. Rychta T. Struktura osobowości studentów i sportowców w świetle teorii R. B. Cattella. Warszawa: Wydawnictwo Akademii Wychowania Fizycznego; 1980 [in Polish]
2. Wlazło E. Diagnoza ustosunkować interpersonalnych w wychowaniu fizycznym i sporcie wyczynowym. Wrocław: Wydawnictwo Akademii Wychowania Fizycznego; 1999 [in Polish]
3. Wlazło E. Psychologia grupy sportowej. Wrocław: Wydawnictwo Akademii Wychowania Fizycznego; 2003 [in Polish]
4. Horbulewicz J. Poziom niepokoju a skuteczność zawodnicza judoków. Poznań: Wydawnictwo Akademii Wychowania Fizycznego 1979; 130: 275-283 [in Polish]
5. Żyto-Sitkiewicz D. Z badań nad osobowością zawodników judo i zapasów (styl wolny). Sport wyczynowy 1981; 6: 34-40 [in Polish]
6. Siek S, Trelak J, Bielecki J. Wpływ ćwiczeń karate na poziom lęku i agresywności. Wychow Fiz Sport 1988; 3: 63-67 [in Polish]
7. Poczwardowski A, Makurat F. Wybrane zmienne psychologiczne zawodników judo reprezentujących różny poziom sportowy. Rocznik Naukowy AWFiS w Gdańsku 1993; 2: 231-243 [in Polish]
8. Botwina R. Osobowościowo-temperamentalne uwarunkowania sukcesu w zapasach juniorów i seniorów. In: Mikołajczyk M, editor. Korelaty psychologiczne aktywności ruchowej i sukcesów w sporcie. Z badań nad osobowością sportowców i studentów uczelni wychowania fizycznego. Warszawa: Polskie Towarzystwo Naukowe Kultury Fizyczne; 2004: 41-47 [in Polish]
9. Bernatek P, Cwyl S, Dudziak D et al. Cechy temperamentu i osobowość zawodników sportów walki i zespołowych gier sportowych. In: Parzelski D, editor. Psychologia w sporcie. Warszawa: Wydawnictwo Uniwersytetu Warszawskiego; 2006: 50-57 [in Polish]
10. Wcisło S. Wpływ kickboxingu na osobowość człowieka. Kraków: Akademia Wychowania Fizycznego im. Bronisława Czecha; 2007 [in Polish]
11. Fuller J. Martial arts and psychological health: Psychology and Psychotherapy. Br J Med Psychol 2011; 61(4): 317-328
12. Binboga E, Guven S, Catikkas F et al. Psychophysiological responses to competition and the Big Five personality traits. J Hum Kinet 2012; 33: 187-194
13. Unrug M, Malesza M. Różnice w osobowości i temperamencie osób trenujących sporty walki amatorsko i zawodniczo. In: Drop E, Maćkiewicz M, editors. Młoda Psychologia. Warszawa: Liberi Libri; 2012: 117-131 [in Polish]
14. Tomczak M, Bręczewski G, Sokołowski M et al. Personality traits and stress coping styles in the Polish National Cadet Wrestling Team. Arch Budo 2013; 9(3): 161-168
15. Boostani MH, Boostani MA, Rezaei AM. Sport psychology in professional karate athletes: give psychological guidelines in order to improve their act in the competitions. Ann Biol Res 2013; 4(1): 48-52
16. Piepiora P, Piepiora D, Witkowski K. Personality of the karatekas and kumite sport fight systems (in view of the karate culture as the regulator of this interdependence). J Combat Sports Martial Arts 2016; 7(1): 35-41
17. Piepiora P, Szmajke A, Migasiewicz J et al. The karate culture and aggressiveness in kumite competitors. Ido Movement Cult J Martial Arts Anthropol 2016; 16(2): 41-47
18. Piepiora P, Petecka A. Personality profile of women practising contact sports with karate kyokushin competitors and handball players as an example. Ido Movement Cult J Martial Arts Anthropol 2020; 20(1): 23-29
19. Piepiora P, Witkowski K, Piepiora Z. Personality profiles of karate masters practising different kumite styles. Arch Budo 2018; 14: 231-241
20. Litwiniuk A, Grants J, Kravalis I et al. Personality traits of athletes practicing eastern martial arts. Arch Budo 2019; 15: 195-201
21. Piepiora P, Witkowski K. Self-defence as a utilitarian factor in combat sports, modifying the personality of athletes at a champion level. Arch Budo Sci Martial Art Extreme Sport. Forthcoming 2020
22. Costa Jr. P, McCrae R. Four ways Five Factors are basic. Pers Indiv Differ 1992; 13: 653-665
23. Costa Jr P, McCrae R. NEO-FFI Personality Inventory. Warszawa: Pracownia Testów Psychologicznych; 2007
24. McCrae R, Costa Jr P. Personality in Adulthood: A Five-Factor theory perspective. New York: Guilford Press; 2003
25. Allen MS, Greenlees I, Jones M. An investigation of the five-factor model of personality and coping behaviour in sport. J Sport Sci 2011; 29: 841-850
26. Allen MS, Greenlees I, Jones M. Personality in sport: a comprehensive review. Int Rev Sport Exercise Psy 2013; 6: 184-208
27. Allen MS, Laborde S. The role of personality in sport and physical activity. Curr Dir Psychol Sci 2014; 23: 460-465
28. Backmand H, Kapiro J, Kujala U et al. Personality and mood of former elite athletes: a descriptive study. Int J Sport Med 2003; 22: 215-221
29. Anghel A, Banica I, Ionescu S. Personality features of elite athletes considering the criterion of the sport practiced. Sport Sci Rev 2009; 1: 5-6
30. Ilyasi G, Salehian MH. Comparison of personality traits between individual and team athletes. Middle E J Sci Res 2011; 9(4): 527-530
31. Binboga E, Guven S, Catikkas F et al. Psychophysiological responses to competition and the Big Five personality traits. J Hum Kinet 2012; 33: 187-194

32. Tok S. The Big Five personality traits and risky sport participation. Soc Behav Pers Int J 2013; 39: 1105-1012
33. Piepiora P, Witkowski K. Personality traits of competitive athletes according to type of pressure exerted on opponents. S Afr J Res Sport Ph 2018; 40(1): 97-109
34. McEwan D, Boudreau P, Curran T et al. Personality traits of high-risk sport participants: A meta-analysis. J Res Pers 2019; 79: 83-93
35. Rychta T. Staż zawodniczy a osobowość zawodników wysokiej klasy. Wychow Fiz Sport 1982; 3-4: 53-58 [in Polish]
36. Żyto-Sitkiewicz D. Relacje między osobowością studentów AWF a stażem zawodniczym. Przeglądowa Konferencja Naukowa AWF ,92; Warszawa, Poland. Warszawa: Akademia Wychowania Fizycznego Józefa Piłsudskiego; 1993: 60-62 [in Polish]
37. Rychta T. Osobowość a zachowanie celowe sportowców. Warszawa: Centralny Ośrodek Sportu; 1998 [in Polish]
38. Rychta T. Zachowanie celowe w sporcie a osobowość. Warszawa: SPSPTNKF; 1998 [in Polish]
39. Kalina RM. Teoria sportów walki. Warszawa: Centralny Ośrodek Sportu; 2000 [in Polish]
40. Paunonen SV. Big Five factors of personality and replicated predictions of behavior. J Pers Soc Psychol 2003; 84: 411-424
41. Blecharz J, Siekańska M. Physical trauma and mental condition of the athlete. Med Sportiva 2005; 9(3): 1-6
42. Siekańska M. Talent sportowy. Psychologiczne i środowiskowe uwarunkowania rozwoju uzdolnionych zawodników. Kraków: Wydawnictwo Akademii Wychowania Fizycznego; 2013 [in Polish]
43. Witkowski K, Piepiora P, Leśnik M et al. Social status of karate and personal benefits declared by adults practicing karate. Arch Budo Sci Martial Arts Extreme Sport 2017; 13: 179-184
44. Witkowski K, Proskura P, Piepiora P. The role of a combat sport coach in the education of youth – a reference to the traditional standards and perception of understanding the role of sport in life of an individual and society. Arch Budo Sci Martial Art Extreme Sport 2016; 12: 123-130
45. Mirzaei A, Nikbakhsh R, Sharififar F. The relationship between personality traits and sport performance. Eur J Exp Biol 2013; 3(3): 439-442
46. Coakley J. The Good Father: Parental Expectations and Youth Sports. Leisure Stud 2006; 25(2): 145-163
47. Kanters MA, Bocarro J, Casper J. Supported or Pressured? An examination of Agreement Among Parent's and Children on Parent's Role in Youth Sport. J Sport Behav 2008; 31(1): 64-80
48. 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: 718-737
49. Wiersma LD, Fifer AM. "The Schedule Has Been Tough But We Think It's Worth It": The Joys, Challenges and recommendations of Youth Sport Parents. J Leisure Res 2008; 40(4): 505-530
50. Dictionary of Sport and Exercise Science. Over 5,000 Terms Clearly Defined. London: A & B Black; 2006
51. Kalina RM, Krzemieniecki LA, Moska W. Gdansk 2nd HMA World Congress 2018 Resolution addressed to: United Nations, Norwegian Nobel Committee, World Health Organization, International Olympic Committee, Conseil International du Sport Militaire. 2nd HMA World Congress; 2018 Jun 14-17; Gdansk, Poland. Gdansk University of Physical Education and Sports, Poland

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ANNEX

Table 7. Basic descriptive statistics for the BJJ group – Brazilian jiu jitsu (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	16.03	16.00	6.79	−0.02	−0.94	4.00	29.00
Extroversion	28.20	29.50	5.92	−0.28	−1.21	17.00	37.00
Openness to experience	28.37	30.00	7.09	−0.44	−0.81	15.00	40.00
Agreeableness	18.63	18.50	3.91	0.22	−0.91	12.00	26.00
Conscientiousness	31.23	32.00	5.56	−0.43	−0.55	20.00	40.00

Table 8. Basic descriptive statistics for ITF group – stylish taekwondo (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	13.17	13.00	5.70	−0.05	−0.36	2.00	25.00
Extroversion	31.57	33.00	5.49	−1.54	3.53	13.00	40.00
Openness to experience	25.03	24.00	7.02	0.66	−0.56	15.00	39.00
Agreeableness	29.17	29.50	6.40	−0.43	0.04	13.00	41.00
Conscientiousness	34.33	34.00	5.69	−0.73	1.6	17.00	43.00

Table 9. Basic descriptive statistics for the JJT group – ju jitsu (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	15.40	17.50	6.25	−0.65	−0.85	4.00	24.00
Extroversion	33.77	34.00	4.83	−0.47	−0.92	24.00	40.00
Openness to experience	24.37	23.50	5.51	−0.04	−0.55	12.00	34.00
Agreeableness	26.43	26.00	6.18	−0.16	−0.76	15.00	37.00
Conscientiousness	36.90	37.00	3.28	−0.62	−0.59	29.00	41.00

Table 10. Basic descriptive statistics for the JUD group – judo (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	11.90	11.50	5.68	0.70	0.88	2.00	28.00
Extroversion	32.83	34.00	4.69	−0.17	−0.87	25.00	41.00
Openness to experience	26.77	29.00	4.75	−0.45	−1.23	18.00	34.00
Agreeableness	29.67	30.00	5.54	−0.03	2.16	14.00	44.00
Conscientiousness	38.87	39.50	6.77	−1.33	4.10	15.00	48.00

Table 11. Basic descriptive statistics for the KBX group – kickboxing (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	13.93	14.00	5.21	−0.81	−0.03	3.00	20.00
Extroversion	33.03	34.50	6.72	−0.24	−0.19	19.00	48.00
Openness to experience	25.87	22.50	7.22	0.54	−1.24	17.00	40.00
Agreeableness	26.93	28.00	5.67	−0.53	−0.11	14.00	37.00
Conscientiousness	36.00	36.00	3.82	0.56	0.70	29.00	46.00

Table 12. Basic descriptive statistics for the KKS group – karate kyokushin (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	12.97	14.50	4.99	−0.61	−0.90	2.00	19.00
Extroversion	32.33	32.00	4.82	0.24	−0.68	24.00	42.00
Openness to experience	25.33	24.00	5.74	0.48	−0.09	15.00	38.00
Agreeableness	28.83	29.00	6.04	0.77	0.80	19.00	46.00
Conscientiousness	35.47	34.50	7.75	−0.08	−0.51	18.00	48.00

Table 13. Basic descriptive statistics for the KOY group – Oyama karate (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	13.83	15.00	5.99	−0.41	−0.25	0.00	26.00
Extroversion	28.83	29.50	6.18	0.23	−0.59	19.00	41.00
Openness to experience	27.43	27.50	6.02	0.27	−0.82	17.00	40.00
Agreeableness	28.40	28.00	4.92	0.11	0.08	17.00	39.00
Conscientiousness	35.03	34.50	7.29	−0.14	−1.29	22.00	47.00

Table 14. Basic descriptive statistics for the KSD group – karate shidokan (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	12.23	13.50	5.79	−0.31	−1.05	0.00	21.00
Extroversion	31.33	31.00	4.46	0.04	−0.56	23.00	40.00
Openness to experience	27.03	27.00	6.02	0.42	0.24	16.00	41.00
Agreeableness	31.23	30.50	5.55	0.85	1.67	22.00	48.00
Conscientiousness	35.57	35.50	6.39	−0.28	−0.37	22.00	46.00

Table 15. Basic descriptive statistics for the KSH group – shotokan karate (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	13.39	15.00	5.56	−1.04	0.67	0.00	22.00
Extroversion	31.58	32.00	5.29	0.12	−0.83	23.00	42.00
Openness to experience	27.06	29.00	6.99	−0.15	−1.23	15.00	38.00
Agreeableness	30.13	29.00	6.24	0.59	2.40	14.00	46.00
Conscientiousness	35.19	36.00	6.91	−0.48	−0.54	20.00	47.00

Table 16. Basic descriptive statistics for the WKF group – Olympic karate (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	8.93	8.50	2.60	0.52	0.71	3.00	15.00
Extroversion	32.60	32.00	3.84	0.65	0.05	26.00	42.00
Openness to experience	26.60	29.00	6.36	−0.23	−0.97	15.00	38.00
Agreeableness	29.30	29.50	5.69	0.25	3.10	14.00	46.00
Conscientiousness	37.30	37.00	4.34	0.15	−0.18	29.00	47.00

Table 17. Basic descriptive statistics for the ZAP group – free style wrestling (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	15.53	16.00	3.66	0.03	0.20	8.00	24.00
Extroversion	32.30	32.50	4.91	0.20	0.46	22.00	44.00
Openness to experience	26.07	26.50	3.32	−0.09	−0.36	19.00	33.00
Agreeableness	27.27	26.00	4.94	0.59	0.13	19.00	39.00
Conscientiousness	32.97	33.50	4.98	−0.90	0.86	19.00	41.00

Table 18. Basic descriptive statistics for MMA group – neo-gladiators (n = 30).

Variables	M	Me	SD	g1	g2	Min.	Max.
Neuroticism	13.33	14.00	4.17	−0.48	0.01	4.00	21.00
Extroversion	29.57	30.00	4.87	−0.37	−0.52	20.00	37.00
Openness to experience	24.30	25.00	6.47	−0.20	1.63	7.00	41.00
Agreeableness	28.00	28.50	5.88	−0.72	−0.03	13.00	36.00
Conscientiousness	36.57	37.00	5.69	−0.78	1.76	19.00	45.00