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Variations in Personality Traits Among Top Judo Referees from 2018 to 2022 Based on Gender Differences

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Abstract: The personality traits of top judo referees are crucial for fair decision-making in elite competitions, shaping the experience for athletes, coaches, and spectators. This study examines potential differences in personality traits among 63 referees from the World Judo Tour between 1 January 2018 and 31 December 2022. Factors analyzed include completing the IJF Academy course Level 1, elite athlete status, number of officiated events, performance ratings, and participation in the Olympic or Paralympic Games. Our research shows that older referees tend to exhibit greater extraversion, whereas less experienced officials show lower levels of this trait. Referees with limited experience generally demonstrate higher agreeableness than their more experienced counterparts. Female referees and those with top performance ratings display greater conscientiousness than male referees. Completing the IJF Academy course is associated with lower neuroticism, while lower performance ratings are linked to higher neuroticism. Openness tends to decrease with increased officiating experience, with less experienced referees showing higher levels of this trait. In conclusion, competitive experience, training completion, and officiating tenure are associated with specific personality traits among judo referees, highlighting the importance of continuous training for effective officiating. The analysis of personality traits revealed no statistically significant differences between male and female referees in the dimensions measured by the BFI (Big Five Inventory). This indicates that the levels of extraversion, agreeableness, conscientiousness, neuroticism, and openness were similar for both genders, with no significant variation in how these traits were expressed.

Keywords: officiating experience; training completion; competitive achievements; performance ratings; major international competitions; sociodemographic characteristics



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1. Introduction

In the dynamic and competitive world of judo, the role of referees is crucial as they are responsible for maintaining the integrity of the sport and ensuring fair and impartial decision-making. Referees are important in sports as they play a key role in supporting the fairness and integrity of competitions. Referees must possess unique skills including knowledge of the rules, physical fitness, and psychological characteristics [1]. In the context of judo, a sport that demands a high level of physical and mental strength from competitors, the role of referees becomes even more critical. Previous research has highlighted the importance of psychological factors in judo, such as anxiety, motivation, and well-being, and their impact on athletes' performance.

Creating and implementing employee profiles in a human resource management system based on a competence model is a critical task for organizations striving for development [2]. In recent decades, there has been significant scientific advancement in developing athletes and, to a lesser extent, coaches. However, such progress has yet to be

seen in refereeing. There is only a desire to create a cadre of referees; international sports federations each provide training for referees in their own way. Some federations, primarily in football, have programs for developing and maintaining referees' physical fitness; most federations have seminars and various meetings where technical and tactical training is conducted using video analyses and practical examples. However, no scientific and holistic approach is used in developing athletes and coaches, which involves the development of all four components—physical, technical, tactical, and psychological abilities.

Judo is a unique Olympic sport and martial art. It has deep roots, originating in Japan in the late 19th century, and was first introduced as an Olympic sport during the 1964 Tokyo Games. Today, judo is one of the most widely practiced sports globally, with over 200 million participants across more than 200 countries. It is one of the six combat sports in the Olympic Games, alongside fencing, wrestling, boxing, taekwondo, and karate [3]. Unlike many other sports, judo is not just about competition; it encompasses a philosophy of self-discipline, respect, and the pursuit of moral and physical excellence, making it unique as a sport and a way of life. As a competitive sport, judo demands both physical prowess and mental strength from its athletes. The sport is defined by its use of throws, joint locks, and pins, and its matches are governed by a strict set of rules. Central to judo is the concept of "mutual welfare and benefit" (Jigoro Kano, judo's founder), which emphasizes respect for one's opponent and the environment. The referee in judo plays an integral role in upholding these values by enforcing the rules, ensuring fairness, and overseeing the conduct of athletes on the mat. Beyond judging points and fouls, judo referees are the guardians of this code of conduct, ensuring that the principles of respect and honor are upheld before, during, and after the match [4]. Referees ensure that the rightful winner leaves the mat. They maintain respect between the opponents—this is also conveyed through the bow before and after the match (with the bow signifying that the game will follow the rules, that both the opponent and the referee, as well as everyone in the arena, are respected, and that the match will be fair)—which is a significant difference from other sports. Referees must observe both competitors, see the techniques used, and make objective decisions about the points awarded. Becoming an elite judo referee is a long educational process (both theoretical and practical) that every referee must undergo. It is based on refereeing experience, with behavioral approaches and correct decision-making in refereeing being crucial [4].

Personality traits are emotional and motivational components of psychological processes. Just as in the selection of talented athletes, special attention must be paid to the individual personality traits of referees. Each personality trait has its peculiarities and can influence the quality of refereeing, which can be straightforward in some situations and challenging in others. Personality traits are not immutable but are, on the contrary, constantly influenced by what is happening in the competition and by the influences of coaches, spectators, and competitors, which can be a distracting factor for referees who are not mentally stable. Therefore, referees having personality traits that are at a high level enables them to engage in rapid adaptation to unfamiliar situations in competitions (which are always present) and make fair refereeing decisions [5]. The definition of personality is very complex, and as a result, many theories explain and define personality and its traits and dimensions in their unique ways. Because of this complexity, it cannot be said that any theory is incorrect, as none defines all the traits and dimensions of personality or presents them from all perspectives. Therefore, today, we have many theories of personality. Personality assessment is a method of psychological inquiry, description, and explanation of personality used for research and practical purposes [6]. The quality of the personality assessment as a synthesis of this information depends on the assessor's knowledge and ability to interpret and integrate the obtained data and link them to theoretical concepts and specific behaviors or the problem of the individual being assessed. The personality assessment includes a description of its structural, functional, and etiological characteristics [7]. The Big Five Personality Model, also known as the Five-Factor Model, is considered one of the most widely used frameworks for understanding personality traits [8]. This

widely accessible assessment tool is popular due to its reliability and validity in measuring the Big Five personality traits [9]. It was designed to capture the most basic dimensions of personality in adults and includes extraversion, agreeableness, conscientiousness, neuroticism (or emotional stability), and openness to experience, collectively known as the Big Five BFI. Its purpose was to provide a concise and representative assessment of personality dimensions, focusing on the core traits consistently found in various Big Five studies. Using 44 short statements, participants rate each domain on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This instrument is freely accessible to the scientific community [10–12].

When addressing the hierarchical composition of athletes' abilities, traits, and knowledge [13], basic anthropological characteristics, specific abilities and traits, and situational performance are considered. This combination contributes to successful athletic outcomes during training and competitions, and personality traits are a part of this process. At the heart of every competition are the rules, and judo is no exception; these rules regulate key aspects of the competition, including interactions between participants, spatial constraints, the use of equipment, and scheduling. Besides the dynamics between competitors, the relationship between referees and competitors also carries significant weight. Referees evaluate technical executions and impose penalties for prohibited actions during bouts, ensuring fairness and equal opportunities for all competitors to demonstrate their skills. This hierarchical structure, encompassing athletes' abilities, traits, and knowledge, can also be a model for understanding referees' abilities, traits, and knowledge [13]. In the dynamic and competitive world of sports, the role of referees is crucial. They are responsible for maintaining the integrity of the sport and ensuring fair and impartial decision-making. Referees play a central role in enforcing rules, ensuring fairness, and upholding the competitive spirit. This is especially true in judo, a martial art and Olympic sport that not only requires physical strength but also adherence to a strict code of conduct rooted in respect, discipline, and tradition. Refereeing in judo is especially challenging due to the sport's fast-paced nature, diverse techniques, and the psychological intensity it demands from competitors and referees. In a sport where athletes' physical and mental conditions are constantly tested, referees must maintain a high level of psychological stability and focus. The role of the referee in judo extends beyond the technical aspects of officiating; they are required to make quick, objective decisions while managing the expectations and emotions of competitors, coaches, and spectators. The psychological pressure on referees can be immense, particularly in high-stakes competitions like the Olympic Games or World Championships. Judo referees, like athletes, must possess specific psychological skills that allow them to perform under pressure. The ability to manage stress, remain calm in unpredictable situations, and make objective decisions is critical. Psychological resilience, adaptability, and the capacity for quick decision-making are key traits that determine the success of a referee in this martial art. These traits are essential for maintaining the integrity of the sport and ensuring that competitors are judged fairly based on their performance rather than external factors such as crowd influence or the athletes' reputation [14]. Research has shown that personality traits are important in determining the quality of refereeing across various sports. In judo, personality traits play a pivotal role in how referees handle the intensity and complexity of the sport. The Big Five Personality Model, which includes extraversion, agreeableness, conscientiousness, emotional stability (low neuroticism), and openness to experience, has been used to study personality profiles in referees [15]. Referees who score higher in conscientiousness and emotional stability are better equipped to manage the stress of officiating, make sound judgments, and handle pressure from athletes, coaches, and fans [16]. In martial arts such as judo, referees also act as stewards of the sport's traditions and values. They must enforce rules that regulate competition and ensure respect between opponents. The bow before and after a match is a symbolic gesture that signifies mutual respect and a commitment to fair play. Referees must maintain this spirit of respect even in the heat of competition, which requires a balance of authority, empathy, and psychological fortitude [17]. Additionally, personality traits such as agreeableness

and extraversion can influence how referees manage interpersonal relationships during competitions. An approachable referee who communicates well may better defuse tense situations on the mat. In contrast, a referee with high conscientiousness will diligently apply rules consistently. On the other hand, referees who exhibit high levels of neuroticism may struggle with the psychological demands of the job, especially in high-pressure scenarios like international tournaments [18]. In our review of various studies on the personality traits of judokas, we found that certain traits are characteristic of judokas. Male first-year students at the University of North Carolina demonstrated courage, ease, and cooperation compared to first-year students engaged in handball, badminton, basketball, and volleyball [19]. Additionally, successful judokas are often characterized by their self-confidence and calm demeanor, as highlighted by [20]. European judo coaches have also emphasized the importance of courage, obedience, kindness, attentiveness, and compassion in elite European judokas, recognizing these traits as essential for success at the highest levels of the sport [21]. Furthermore, Beygul [22] identified self-confidence and concentration as key factors that significantly influence judokas' performance in competitions, underscoring the importance of mental and emotional attributes in achieving excellence in judo.

Several studies have examined the relationship between personality traits and the career development of referees. Research on soccer referees has shown that personality profiles significantly determine referees' career positions, with different traits leading to varying career outcomes [23]. Additionally, López-Aguilar et al. [24] found that amateur soccer referees with higher self-efficacy displayed lower levels of impulsivity, suggesting that self-confidence helps referees maintain better control in their decision-making. Further exploration of Premier League referees revealed significant correlations between personality dimensions and refereeing methods, with adaptability being positively linked to the quality of refereeing judgment [25]. Moreover, studies on factors influencing refereeing performance emphasized the importance of decision-making, physical and psychological preparedness, and managing stressful situations to improve referees' performance during competitions [14,26]. A study by [16] explored how personality profiles, using the Big Five Personality Model, influence success in sports by comparing athletes from various disciplines with champions who excelled in their competitions. The results showed that champions had lower levels of neuroticism and higher levels of extraversion, openness to experience, agreeableness, and conscientiousness compared to other athletes. Neuroticism was particularly important, with lower levels linked to a higher likelihood of becoming a champion. Significant differences were observed between champions and other athletes across all Big Five dimensions. These findings suggest that personality differences may be a result, rather than a cause, of athletic success, especially in individuals aged 20 to 29 years [17,27]. A study by [28] examined the differences in psychological factors, including basic personality traits and self-esteem, between combat and team sports athletes. The findings revealed significant differences in self-esteem, neuroticism, and conscientiousness between the two groups, underscoring the importance of these psychological factors in distinguishing between combat and team sports athletes. These results highlight how varying personality traits influence athletes depending on the nature of their sport [17,27]. A study by [29] emphasized the crucial role of personality in referees' success, particularly effective game management. By examining the personality profiles of professional male handball referees using the German version of the Big Five Inventory 2 (BFI-2), the researchers found that referees scored higher in extraversion, agreeableness, and conscientiousness while scoring lower in negative emotionality. These findings offer valuable initial insights into the personality traits of professional handball referees and provide a foundation for future research to explore whether similar personality patterns exist among referees from different sports and backgrounds. A study by [30] examined the psychological skills specific to rugby referees and their impact on performance. While no significant differences in psychological skills were found across different age groups, the study revealed significant differences based on experience level. Highly experienced referees demonstrated superior psychological skills compared to those with less experience. These findings suggest that

enhancing psychological skills could improve the overall effectiveness of rugby referees, particularly as they gain more experience. A study by [31] investigated Spanish basketball referees' personality profiles compared to the general population. The findings indicated that psychological skills training could be beneficial in helping referees display appropriate behavior during matches, as this is currently a gap in their range of competencies. This highlights the need for targeted mental training to improve referees' conduct and performance on the court. A study [4] aimed to identify the specific characteristics of martial arts trainers and elite trainers in Olympic, world, and European sports. The results revealed that both groups shared key traits such as goal orientation, motivation, charisma, and altruism. These qualities were important for their effectiveness in training and guiding athletes to success in high-level competitions. A study by [32] compared judokas with at least five years of training experience to athletes from various team sports, focusing on traits like aggressiveness, emotional intelligence, and self-efficacy. The findings revealed that professional judokas exhibited lower levels of aggressiveness and higher levels of honesty/humility and openness to experience than team sports athletes. In contrast, team sports athletes demonstrated higher levels of aggressiveness, emotional stability, and extraversion but lower levels of honesty/humility and openness to experience. These differences highlight the distinct personality profiles shaped by the nature of individual versus team sports.

However, more research is still needed on how specific personality traits can affect refereeing performance in judo. Developing a more comprehensive understanding of how traits such as openness, emotional stability, and conscientiousness contribute to effective refereeing could lead to better selection processes for referees at the elite level. It could also inform the design of psychological training programs to enhance referees' mental resilience and decision-making abilities under pressure. For this reason, the study's purpose is to explore potential differences in personality traits among elite judo referees, focusing on various demographic factors such as completion of the IJF Academy Level 1 course, elite athlete status, the number of events refereed, performance ratings, and participation in the Olympic or Paralympic Games.

2. Materials and Methods

The role of referees in sports, particularly in judo, extends beyond mere rule enforcement; it encompasses complex decision-making influenced by their personality traits. Understanding these traits is essential for ensuring fair and effective officiating in elite competitions. This section delves into the theoretical underpinnings of how personality traits such as agreeableness, conscientiousness, and openness shape referees' performance and decision-making processes. We will also present the sample and methodology used in our study to investigate these personality traits and their influencing factors among judo referees at the highest level of competition.

2.1. Sample

The sample included 63 judo referees from a potential pool of 93 respondents who officiated in the World Judo Tour (WJT) between 1 January 2018 and 31 December 2022. Sampling method—within the IJF, two types of licenses exist to officiate international competitions. The first is the continental license—the continental judo unions are responsible for organizing the exams for this license. Referees with this license can officiate all competitions under the jurisdiction of continental and national judo federations on their continent. The second license is the international license, the highest global license for judo officiating. Exams for this license are conducted under the IJF, and only referees with this license can officiate IJF-sanctioned competitions through official nominations. Thus, the IJF conducts selection for officiating at competitions under its jurisdiction and that of other international sports organizations with which the IJF cooperates (IOC, IBSA, FISU). The sample included judo referees who held both licenses and were selected to judge in the World Judo Tour.

2.2. Data Collection

The judo referees completed an online survey. The questionnaire consisted of two parts. The first part contained demographic questions, while the second included the BFI questionnaire (44 questions). The Big Five Inventory (BFI) questionnaire is a widely used tool in psychology to assess personality traits. It consists of 44 questions designed to measure five key dimensions of personality: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Respondents rate each statement on a five-point Likert scale, ranging from “strongly disagree” to “strongly agree”, based on their self-perception. This helps understand individual personality differences and can be used in various research and applied settings.

2.3. Procedure

Due to the small sample size, non-parametric methods were used for all analyses of differences and correlations. Descriptive statistics were used to compare the expression of personality traits between groups based on demographic variables. Additionally, correlation analysis examined the relationship between continuous and categorical sociodemographic variables and personality traits. Statistical significance was set at $p \leq 0.05$.

The data collected from the questionnaires were processed using IBM SPSS and AMOS 26 statistical software. For ordinal variables, basic descriptive statistics were presented (arithmetic mean = Mean, minimum value = MIN, maximum value = MAX, standard deviation = SD), while for categorical demographic data, frequencies and proportions were shown.

New aggregate variables were derived as averages of the statements within each set of questions. The Kolmogorov–Smirnov test revealed that the distribution of some variables deviated from a normal distribution, leading us to use non-parametric tests for bivariate analyses. For easier substantive comparison, averages were also presented. Relationships between the studied concepts were tested using the chi-square test of independence or Spearman’s correlation coefficient, and group comparisons of statement ratings were performed using the Mann–Whitney U test or Kruskal–Wallis test. If the conditions for using the chi-square test were not met (i.e., the presence of cells with expected frequencies below five), we used the likelihood ratio or the Kullback 2I alternative test.

3. Results

Due to the comparison of groups in a small sample, non-parametric tests were used for all analyses of differences. In no case were there statistically significant differences in ratings of the BFI dimension ($p > 0.05$), indicating that none of the dimensions significantly stands out based on the observed sociodemographic characteristics.

However, certain differences in the expression of personality traits between groups were noted. For example, the level of extraversion increases with age (Table 1). Additionally, for our sample, the highest level of this trait was observed in individuals who received the lowest ratings at officiated tournaments (4.1 ± 0.8), while the lowest was observed in individuals under the age of 45 (3.6 ± 0.9) and those with moderate experience in officiating events ($6\text{--}20$ events; 3.6 ± 0.9).

A statistically significant difference in the level of agreeableness was detected based on whether the surveyed judge has a medal from major international competitions, in which case the trait was more pronounced ($p = 0.031$) (Table 2). In no other case were there statistically significant differences in ratings of the BFI dimension of agreeableness ($p > 0.05$), indicating that none of the other dimensions significantly stands out based on the observed sociodemographic characteristics.

Table 1. BFI dimension extraversion and comparisons based on categorical sociodemographic variables.

		<i>n</i> = 59–63	<i>n</i>	M	SD	KW/MWU Statistic	<i>p</i> -Value
Gender	Male		44	3.7	0.8	388,000	0.652
	Female		19	3.8	1.0		
Age	Less than 45 years		22	3.6	0.9	1740	0.419
	45–54 years		30	3.8	0.9		
	55 years and older		10	4.0	0.9		
Completed IJF Academy Level 1 for Coaches or Practical Module for Referees?	No		15	3.9	0.7	339,500	0.739
	Yes		48	3.7	0.9		
Competitive result—Has a medal from major international competitions (continental/world championships, Olympic Games)	No		52	3.8	0.9	282,000	0.942
	Yes		11	3.8	0.8		
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	1–5 competitions		17	3.8	0.9	1969	0.374
	6–20 competitions		24	3.6	0.9		
	21–34 competitions		21	4.0	0.8		
Average score at IJF competitions judged from 1 January 2018 to 31 December 2022	5.5–6.8		6	4.1	0.8	0.914	0.822
	7.0–7.5		28	3.7	0.9		
	7.6–7.9		15	3.9	0.9		
	8.0–8.5		10	3.8	0.9		
Experience judging major competitions (Olympic and/or Paralympic Games)	No		35	3.6	0.9	408,000	0.254
	Yes		28	3.9	0.9		

Despite all the aforementioned, certain differences in the expression of personality traits between groups were noted. Specifically, the highest level was observed in individuals with very little experience in IJF events where they officiated (1–5 events; 4.6 ± 0.5). The lowest ratings or level of expressed agreeableness were measured in individuals with extensive experience in officiating IJF events (21–34 events: 4.2 ± 0.7), among those groups who received the highest ratings at officiated tournaments (7.6–7.9: 4.2 ± 0.5 ; 8.0–8.5: 4.2 ± 0.8), and among those surveyed who already have experience in officiating at major competitions (4.2 ± 0.8).

In no case were there statistically significant differences in ratings of the BFI dimension ($p > 0.05$), indicating that none of the dimensions stands out based on the observed sociodemographic characteristics.

However, based on the comparison of descriptive statistics, certain differences in the expression of personality traits between groups were noted. Specifically, the highest level of conscientiousness (Table 3) was observed in females (4.6 ± 0.4) and individuals with the highest ratings at officiated tournaments (8.0–8.5; 4.6 ± 0.4). On the other hand, the lowest ratings or level of expressed conscientiousness were measured among surveyed judges with ratings of 7.6–7.9 at officiated tournaments (4.3 ± 0.5).

There is a statistically significant difference ($p = 0.011$) in the expression of the personality trait neuroticism (Table 4) among those who have completed the IJF Academy course (1.9 ± 0.6) and those who have not (2.5 ± 0.9 ; $p = 0.011$). Based on these results, it could be inferred that completing the IJF Academy course may have an impact on reducing the level of neuroticism, while gender, age, and other sociodemographic variables do not show a significant influence on this dimension.

Table 2. BFI dimension agreeableness and comparisons based on categorical sociodemographic variables.

		<i>n</i>	<i>M</i>	<i>SD</i>	KW/MWU Statistic	<i>p</i> -Value
		<i>n</i> = 59–63				
Gender	Male	44	4.3	0.6	348,500	0.289
	Female	19	4.4	0.7		
Age	Less than 45 years	22	4.3	0.6	0.508	0.776
	45–54 years	30	4.4	0.7		
	55 years and older	10	4.4	0.6		
Completed IJF Academy Level 1 for Coaches or Practical Module for Referees?	No	15	4.5	0.5	329,000	0.610
	Yes	48	4.3	0.7		
Competitive result—has a medal from major international competitions (continental/world championships, Olympic Games)	No	52	4.3	0.7	169,000	0.031
	Yes	11	4.7	0.3		
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	1–5 competitions	17	4.6	0.5	2750	0.253
	6–20 competitions	24	4.3	0.7		
	21–34 competitions	21	4.2	0.7		
Average score at IJF competitions judged from 1 January 2018 to 31 December 2022	5.5–6.8	6	4.5	0.7	4056	0.255
	7.0–7.5	28	4.4	0.7		
	7.6–7.9	15	4.2	0.5		
	8.0–8.5	10	4.2	0.8		
Experience judging major competitions (Olympic and/or Paralympic Games)	No	35	4.5	0.5	426,500	0.371
	Yes	28	4.2	0.8		

It is also worth mentioning that the highest level of the personality trait neuroticism was observed among respondents with the lowest ratings at officiated IJF tournaments (5.5–6.8; 2.9 ± 1.0), while the lowest level was observed among those with the highest ratings at officiated IJF tournaments (8.0–8.5; 1.8 ± 0.5).

In no case were there statistically significant differences in ratings of the BFI dimension openness ($p > 0.05$), indicating that none of the dimensions significantly stand out based on the observed sociodemographic characteristics (Table 5).

However, certain differences in the expression of personality traits between the compared groups were noted. Specifically, based on the sample data, the highest level of the trait openness was observed among those with very little experience in IJF events where they officiated (1–5 events; 4.1 ± 0.8) and among individuals with moderately good ratings at officiated IJF events (7.0–7.5; 4.1 ± 0.8). Interestingly, the level of openness decreases with an increase in the number of officiated events. The lowest ratings or levels of expressed openness were measured among individuals with better ratings at officiated IJF events (7.6–7.9; 3.5 ± 0.9).

The calculation of the correlation between ordinal and numerical sociodemographic variables and personality traits (Table 6) revealed two statistically significant correlations. Firstly, there was a negative correlation between the level of education and the rating of the personality trait agreeableness, indicating that as the level of education increases, the rating of agreeableness decreases ($\rho = -0.273$; $p = 0.031$). Secondly, there was a positive correlation between the number of medals from major international competitions and agreeableness. This suggests that as the number of medals from major international competitions increases the rating of agreeableness also increases ($\rho = 0.277$; $p = 0.028$).

Table 3. BFI Dimension conscientiousness and comparisons based on categorical sociodemographic variables.

	<i>n</i> = 59–63	<i>n</i>	<i>M</i>	<i>SD</i>	KW/MWU Statistic	<i>p</i> -Value
Gender	Male	44	4.4	0.6	357,500	0.355
	Female	19	4.6	0.4		
Age	Less than 45 years	22	4.4	0.5	0.481	0.786
	45–54 years	30	4.5	0.6		
	55 years and older	10	4.4	0.7		
Completed IJF Academy Level 1 for Coaches or Practical Module for Referees?	No	15	4.5	0.6	338,000	0.717
	Yes	48	4.4	0.5		
Competitive result—has a medal from major international competitions (continental/world championships, Olympic Games)	No	52	4.4	0.6	260,000	0.631
	Yes	11	4.5	0.5		
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	1–5 competitions	17	4.5	0.6	0.428	0.807
	6–20 competitions	24	4.4	0.6		
	21–34 competitions	21	4.4	0.5		
Average score at IJF competitions judged from 1 January 2018 to 31 December 2022	5.5–6.8	6	4.5	0.5	3097	0.377
	7.0–7.5	28	4.5	0.6		
	7.6–7.9	15	4.3	0.5		
	8.0–8.5	10	4.6	0.4		
Experience judging major competitions (Olympic and/or Paralympic Games)	No	35	4.4	0.6	467,500	0.751
	Yes	28	4.5	0.5		

The analysis of testing differences and correlations between sociodemographic characteristics of the sample and personality trait variables showed that there are no differences based on the gender and age of the respondents. Instead, experiences and additional training are more crucial, as more noticeable differences or correlations were present in the following variables:

- Participation in the IJF Academy training;
- Level of education;
- Competitive results;
- Number of tournaments officiated (including major competitions);
- Ratings in officiated tournaments.

However, it is worth noting that only a few statistically significant differences were found, specifically regarding the level of agreeableness and competitive results at the international level and neuroticism level based on whether the referee completed the IJF Academy training. Additionally, correlation analysis revealed one statistically significant correlation between the level of education and the agreeableness trait. The conclusion is that education or further training has the most significant impact on personality traits. At the same time, other sociodemographic characteristics are less influential in determining the extent to which individual personality traits are expressed.

Table 4. BFI Dimension Neuroticism and Comparisons Based on Categorical Sociodemographic Variables.

	<i>n</i> = 59–63	N	M	SD	KW/MWU Statistic	<i>p</i> -Value
Gender	Male	44	2.0	0.8	327,500	0.171
	Female	19	2.2	0.6		
Age	Less than 45 years	22	2.0	0.6	0.016	0.992
	45–54 years	30	2.0	0.7		
	55 years and older	10	2.1	1.0		
Completed IJF Academy Level 1 for Coaches or Practical Module for Referees?	No	48	1.9	0.6	205,000	0.011
	Yes	15	2.5	0.9		
Competitive result—has a medal from major international competitions (continental/world championships, Olympic Games)	No	52	2.0	0.7	257,000	0.596
	Yes	11	2.2	1.0		
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	1–5 competitions	17	2.3	0.9	2672	0.263
	6–20 competitions	24	1.9	0.7		
	21–34 competitions	21	1.9	0.6		
Average score at IJF competitions judged from 1 January 2018 to 31 December 2022	5.5–6.8	6	2.9	1.0	6555	0.088
	7.0–7.5	28	1.9	0.7		
	7.6–7.9	15	2.1	0.6		
	8.0–8.5	10	1.8	0.5		
Experience judging major competitions (Olympic and/or Paralympic Games)	No	35	2.1	0.8	403,000	0.224
	Yes	28	1.9	0.6		

Table 5. BFI dimension openness and comparisons based on categorical sociodemographic variables.

	<i>n</i> = 59–63	<i>n</i>	M	SD	KW/MWU Statistic	<i>p</i> -Value
Gender	Male	44	3.9	0.8	381,500	0.582
	Female	19	4.0	0.9		
Age	Less than 45 years	22	3.7	0.9	1699	0.428
	45–54 years	30	4.0	0.8		
	55 years and older	10	4.0	0.7		
Completed IJF Academy Level 1 for Coaches or Practical Module for Referees?	No	15	4.0	0.5	337,500	0.715
	Yes	48	3.9	0.9		
Competitive result—has a medal from major international competitions (continental/world championships, Olympic Games)	No	52	4.0	0.7	239,000	0.392
	Yes	11	3.7	1.0		
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	1–5 competitions	17	4.1	0.8	0.784	0.676
	6–20 competitions	24	4.0	0.7		
	21–34 competitions	21	3.8	0.9		
Average score at IJF competitions judged from 1 January 2018 to 31 December 2022	5.5–6.8	6	3.9	0.5	5063	0.167
	7.0–7.5	28	4.1	0.8		
	7.6–7.9	15	3.5	0.9		
	8.0–8.5	10	3.9	0.8		

Table 5. Cont.

<i>n</i> = 59–63		<i>n</i>	M	SD	KW/MWU Statistic	<i>p</i> -Value
Experience judging major competitions (Olympic and/or Paralympic Games)	No	35	4.0	0.7	473,000	0.813
	Yes	28	3.9	0.9		

Table 6. BFI Dimensions and Testing Association with Ordinal and Numerical Sociodemographic Variables.

<i>n</i> = 59–63		Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Age	Spearman's rho	0.195	0.133	0.112	0.050	0.206
	<i>p</i> -value	0.129	0.303	0.386	0.697	0.109
Judo level (black belt level)	Spearman's rho	−0.045	0.000	−0.060	0.074	−0.154
	<i>p</i> -value	0.729	0.997	0.641	0.565	0.227
Highest level of formal education achieved	Spearman's rho	−0.017	−0.273 *	−0.015	−0.029	−0.123
	<i>p</i> -value	0.898	0.031	0.907	0.820	0.338
Competitive result—number of medals in international competitions	Spearman's rho	0.000	0.277 **	0.060	0.085	−0.099
	<i>p</i> -value	0.999	0.028	0.639	0.508	0.442
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	Spearman's rho	0.101	−0.143	0.004	−0.204	−0.062
	<i>p</i> -value	0.433	0.267	0.975	0.111	0.634
Average score in judged IJF competitions from 1 January 2018 to 31 December 2022	Spearman's rho	0.001	−0.218	−0.160	−0.144	−0.172
	<i>p</i> -value	0.993	0.097	0.225	0.278	0.193
Number of IJF competitions judged from 1 January 2018 to 31 December 2022	Spearman's rho	0.215	−0.066	0.101	−0.166	0.069
	<i>p</i> -value	0.090	0.608	0.430	0.193	0.590

* Connection is statistically significant at $p < 0.05$. ** Connection is statistically significant at $p < 0.01$.

4. Discussion

Referees are crucial to ensuring fair sports competitions, particularly in judo. Sports scientists view them as rule enforcers and performers whose decisions significantly influence match outcomes. In judo, where intense physical contact occurs, referees face the challenge of balancing fairness with minimal interference. Their role requires technical knowledge, emotional intelligence, quick decision-making, and effective communication skills [5]. Social cognition theory explains how referees process information and make decisions, highlighting factors like sequence effects and positional biases that influence judgment. These approaches illuminate how judo referees' decision-making is shaped by cognitive factors, physical expertise, and personal traits [33]. This research focuses on how personality traits such as agreeableness, conscientiousness, and openness contribute to fair decision-making in elite competitions. These traits and sociodemographic characteristics are influenced by competition experience, education, and seniority, emphasizing the importance of experience and personality in developing effective referees. This study examines the personality traits of 63 top judo referees from the World Judo Tour between 2018 and 2022, exploring how factors such as their experience level, completion of the IJF Academy course, and performance ratings may influence their decision-making abilities.

Our findings suggest that older referees tend to exhibit greater extraversion, which may contribute to their ability to effectively communicate with athletes and maintain control of the competition [34]. Conversely, less experienced officials demonstrate lower levels of extraversion, potentially impacting their confidence and ability to make decisive calls. Additionally, we observe that referees with limited experience generally display higher agreeableness levels than their more seasoned counterparts [35]. This personality trait, which reflects a tendency towards cooperation and empathy, may be particularly beneficial in fostering a positive and inclusive environment for all participants. Our

data also reveals that female referees and those with top performance ratings exhibit greater conscientiousness, a trait characterized by organization, discipline, and a strong sense of duty. These qualities are crucial for maintaining high standards and effectively managing the complexities of judo competitions. Female referees may exhibit greater conscientiousness due to societal expectations and roles that emphasize organization, discipline, and a strong sense of duty.

The study revealed no other statistically significant differences in personality traits between male and female judo referees. This aligns with previous research suggesting that gender differences in personality traits within sports contexts are often minimal or negligible [36]. However, it is important to consider that broader research on career decisions often highlights significant differences between men and women, resulting from various factors, including socialization, personality traits, and societal norms.

Socialization from early childhood shapes interests and preferences, which later influence educational and career paths. Men are more likely to pursue STEM fields (science, technology, engineering, and mathematics), which are more prestigious and better paid. At the same time, women tend to focus on social sciences and humanities, leading to less valued and less well-paid careers [37]. This divergence in interests and career choices may also impact the career progression and advancement of male and female referees in sports. Additionally, research indicates that men are more often motivated by status and material benefits, whereas women prioritize work that allows collaboration and helping others, influencing their career choices [38]. Such motivational factors could lead to different approaches to career advancement among judo referees, with men potentially being more inclined to seek higher-status positions. At the same time, women might choose paths that offer a better work–life balance.

The study also found that education and training, such as that provided by the IJF Academy, significantly reduced neuroticism, highlighting the positive effects of formal education on referees' psychological well-being. This aligns with findings showing that formal educational programs are crucial for technical and tactical improvements and for developing key personality traits that can enhance refereeing performance [29].

These results underscore the need for continuous education and training for judo referees in technical and tactical areas and in developing and nurturing essential personality traits. Understanding how sociodemographic characteristics influence personality traits and career decisions can enable sports federations and organizations to effectively tailor training programs to improve referees' performance and well-being [4].

5. Conclusions

Judo, both as a martial art and an Olympic sport, places unique demands on its referees. Beyond technical knowledge and physical fitness, referees must demonstrate strong psychological traits such as emotional stability, conscientiousness, and adaptability to ensure fairness and respect are maintained throughout the competition. Personality traits play a crucial role in determining how referees manage the pressures of officiating, and understanding these traits is essential for developing effective referees who can uphold the values of judo at the highest levels of competition. This study provides important insights into the personality traits of top judo referees and their relationship with various sociodemographic factors such as age, gender, education, and officiating experience. Despite initial assumptions, no statistically significant differences were found in the Big Five personality traits based on gender, suggesting that male and female referees exhibit similar levels of extraversion, agreeableness, conscientiousness, neuroticism, and openness. However, the study did highlight the importance of education and competitive experience in shaping specific personality traits, particularly agreeableness and neuroticism. The findings indicate that formal training, such as the IJF Academy course, is crucial in reducing neuroticism among referees, underscoring the value of continuous education and psychological development in enhancing officiating performance. Moreover, the positive correlation between agreeableness and competitive success suggests that referees who achieve higher levels

of success in their careers may also demonstrate stronger interpersonal skills. These results emphasize the need for sports organizations to implement comprehensive training programs that focus on the technical aspects of refereeing and the development of key psychological traits. By doing so, they can help ensure that referees are well-equipped to handle the pressures of elite competitions and maintain fairness and integrity in judo.

This study contributes significantly to the understanding of how personality traits influence decision-making among elite judo referees. Decision-making, particularly in high-stakes environments like international judo competitions, is a complex process that requires technical expertise, psychological stability, and adaptability. Referees are often tasked with making split-second decisions that can affect the outcome of matches, which places immense pressure on their cognitive and emotional processes.

Future research should explore these relationships further, particularly through longitudinal studies that examine how personality traits evolve with experience and training. Research could provide valuable insights into how best to support referees in their professional development, ultimately contributing to the overall quality of officiating in judo and other combat sports.

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