

# YOUNG ATHLETE PERSONALITY MODEL USING THE EXAMPLE OF SELECTED SPORT DISCIPLINES

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## **Introduction**

In today's sport, where athletes' physical fitness is at the highest level, it is their mind that determines the winner. The mind should be understood here as the ability to control emotions, a very good knowledge of the border between weaknesses and strengths, focus, visualisation, self-confidence, mental strength and motivation. In order to increase the likelihood of success, intensive training is needed. This, in turn, depends on the coaching staff and the athlete him or herself - his or her personality, i.e. the value that defines an athlete as a social individual.

The purpose of this study was to attempt to specify and elaborate on the young athlete personality model. Athletes exhibit a personality that is typical for physically active people [Botwina, 2004; Lipowski, 2004; Piepiora and Piepiora, 2015; Piepiora et al. 2016]. The personality traits of athletes practising individual and team disciplines were compared. In connection with the above, the following hypotheses were put forward for verification:

1. The young athlete model is characterised by an medium level of neuroticism, extraversion, openness to experience and agreeableness and a high level of conscientiousness.
2. Athletes practising individual disciplines differ in their personality traits from athletes practising team disciplines.

The following study questions were then asked:

1. Do athletes practising an individual discipline differ from athletes practising a team discipline in the context of their personality?
2. Do athletes practising an individual discipline not exhibit personality differences with respect to athletes practising a team discipline?

## **Research method and subjects**

The NEO-FFI personality inventory [Costa Jr. and McCrae, 2007] was applied for conducting the study. It is a tool used to measure the personality traits included in the five-factor personality model (neuroticism, extraversion, openness to experience, agreeableness and conscientiousness) and is known as the "Big Five" model. The results of the NEO-FFI personality questionnaire may be considered in terms of the psychometric aspect, which will enable us to relate the results of the person tested to the reference group, and the psychological aspect, in which we may distinguish between profile interpretation (characteristics of the individual) and functional interpretation (significance of personality and adaptability to the environment).

The test sample was purposefully selected by taking into account the nature of the study. A group of 60 individuals was recruited for the study, of whom:

- 30 respondents were practising volleyball /a team sport/;
- 30 respondents were practising swimming /an individual sport/.

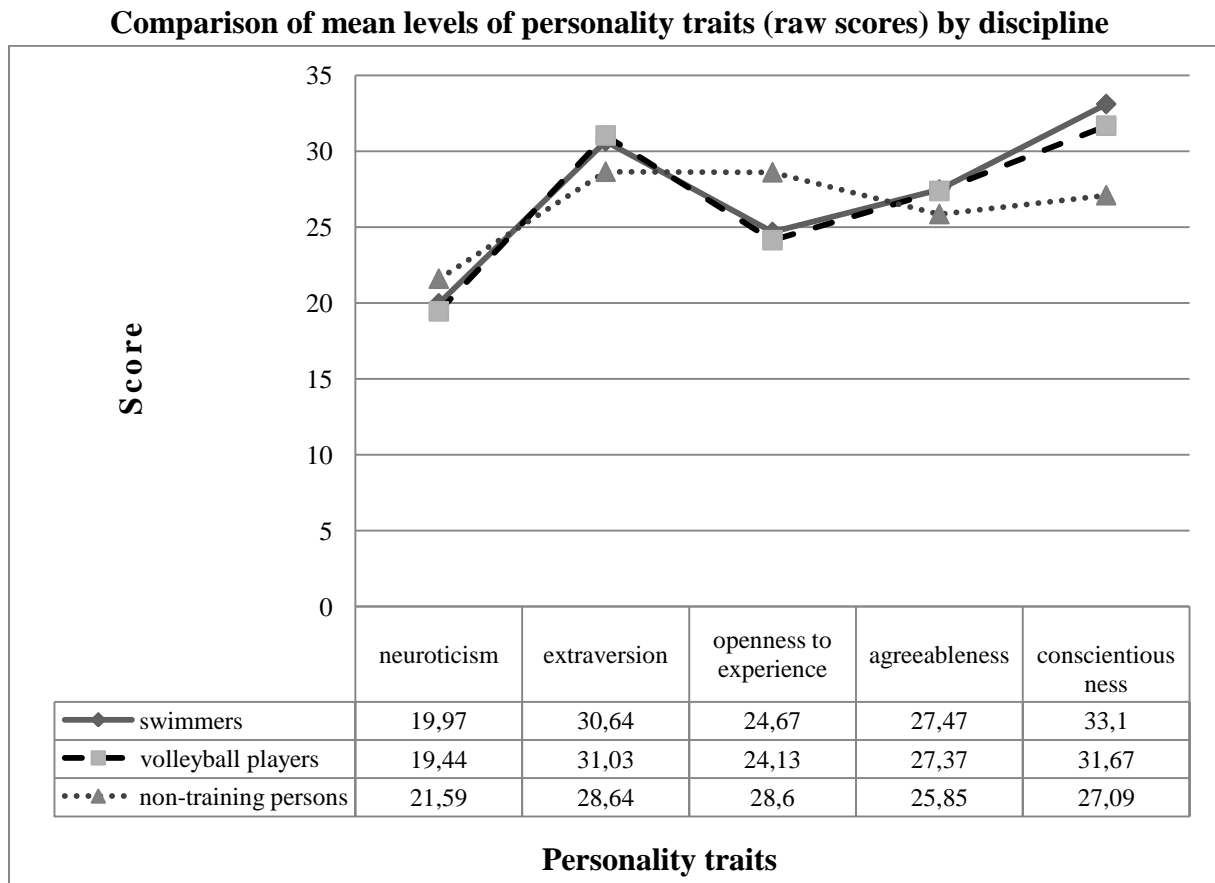
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The persons who filled out the NEO-FFI questionnaire were boys aged 16-18. The test subjects engaged in regular sport training in such disciplines as swimming and volleyball. They were students of the Athletic Secondary School in Wrocław. The young athletes had had numerous sport successes, such as places on the podium in regional or national championships. The reference sample of non-training persons was based on the data compiled by the NEO-FFI authors for boys aged 16-18.

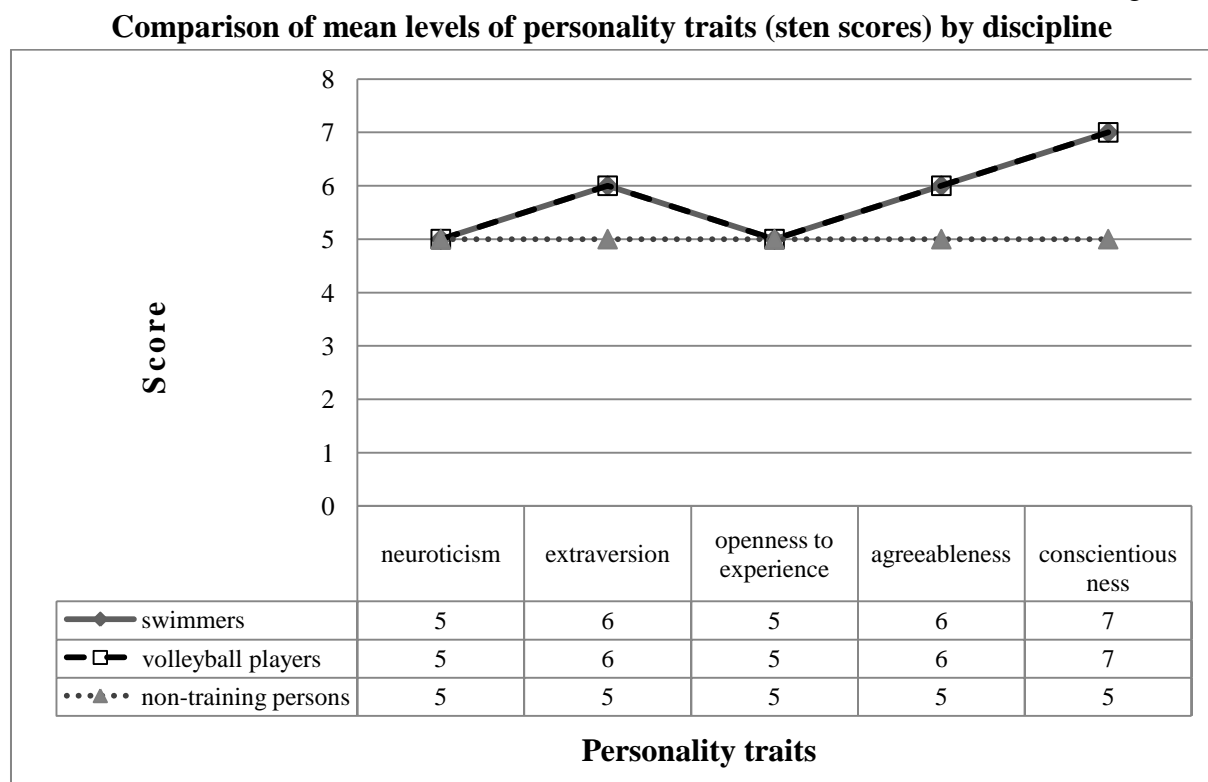
## Results

Figure 1.



The results of the analysis of the tests carried out proved to be statistically insignificant - the groups compared are similar to each other in all scales. Athletes, as opposed to non-training persons, are characterised by less neuroticism and openness to experience but greater extraversion, agreeableness and conscientiousness. Thus, the young athlete model, regardless of the discipline, is identical in the context of neuroticism, extraversion, openness to experience, conscientiousness and agreeableness.

Figure 2.



The raw scores were converted into sten scores. It was assumed by the NEO-FFI authors that results in the 1-3 sten score range should be regarded as low scores, those in the 4-6 range - as medium scores and those in the 7-10 range - as high scores. An analysis of figure 2 and the personality sten score scale revealed that both swimmers and volleyball players exhibited a medium level of neuroticism (5), extraversion (6), openness to experience (5) and agreeableness (6), while their conscientiousness was at a high level (7).

The results of the persons not practising any sport disciplines are in the medium range on the sten score scale (5) for all of the five factors: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. As regards the comparison of non-training persons and competitive athletes, there is a significant difference on the conscientiousness scale and no significant differences with respect to the other factors.

For the purpose of a more in-depth analysis the basic descriptive statistics were calculated and a Kolmogorov-Smirnov test was performed, which examines the normality of the distribution of quantitative variables measured (tab. 1). It revealed that the distributions of all the variables measured, both in the swimmers' and the volleyball players' group, were in line with the normal distribution. A decision was, therefore, made to perform parametric tests and analyses in this study. The collective results of all the descriptive statistics calculated together with the normality of distribution test are summarised in table 2.

Table 1.

**Basic descriptive statistics of quantitative variables measured together  
with Kolmogorov-Smirnov test**

|                               | <b>M</b> | <b>Mdn</b> | <b>SD</b> | <b>Sk.</b> | <b>Kurt.</b> | <b>Min.</b> | <b>Max.</b> | <b>K-S</b> | <b>Relevance</b> |
|-------------------------------|----------|------------|-----------|------------|--------------|-------------|-------------|------------|------------------|
| <b>Swimming</b>               |          |            |           |            |              |             |             |            |                  |
| <b>Neuroticism</b>            | 19.97    | 21.00      | 8.46      | -0.02      | 0.14         | 2.00        | 38.00       | 0.82       | 0.508            |
| <b>Extraversion</b>           | 30.63    | 30.50      | 5.75      | 0.15       | -0.64        | 21.00       | 43.00       | 0.50       | 0.964            |
| <b>Openness to experience</b> | 24.67    | 25.00      | 5.35      | 0.51       | 0.43         | 16.00       | 39.00       | 0.60       | 0.871            |
| <b>Agreeableness</b>          | 27.47    | 27.50      | 5.77      | -0.14      | 0.43         | 16.00       | 39.00       | 0.91       | 0.378            |
| <b>Conscientiousness</b>      | 33.10    | 33.00      | 6.01      | 0.29       | -0.05        | 22.00       | 46.00       | 0.68       | 0.737            |
| <b>Volleyball</b>             |          |            |           |            |              |             |             |            |                  |
| <b>Neuroticism</b>            | 19.43    | 19.00      | 5.67      | 0.11       | 0.19         | 7.00        | 32.00       | 0.64       | 0.804            |
| <b>Extraversion</b>           | 31.03    | 31.00      | 2.75      | 0.36       | 1.44         | 26.00       | 39.00       | 0.89       | 0.407            |
| <b>Openness to experience</b> | 24.13    | 24.00      | 3.79      | 1.52       | 5.31         | 17.00       | 38.00       | 0.98       | 0.298            |
| <b>Agreeableness</b>          | 27.37    | 27.50      | 5.35      | -0.63      | 0.26         | 14.00       | 37.00       | 0.58       | 0.889            |
| <b>Conscientiousness</b>      | 31.67    | 30.50      | 6.14      | 0.74       | 0.24         | 22.00       | 47.00       | 0.79       | 0.553            |

*M* - mean; *Mdn* - median; *SD* - standard deviation; *Sk.* - skewness; *Kurt.* - kurtosis; *K-S* - Kolmogorov-Smirnov test result

In order to examine whether the type of sport discipline has a statistically significant impact on the personality traits of the test subjects, a number of Student's t-tests for one sample, Wilcoxon tests for one sample, Student's t-tests for independent samples and Mann-Whitney *U* tests were performed. First, using a Student's t-test for one sample, it was checked whether the intensity of personality traits measured by a raw score is different between the swimmers and the subjects who did not practise any sport. As indicated by the values in table 3, there are statistically significant differences between the groups with regard to openness to experience and conscientiousness and differences significant at the level of the statistical trend with regard to extraversion. It turns out that non-training persons exhibit a higher level of openness to experience, while swimmers - a higher level of conscientiousness and extraversion when compared to the former. The measure of Cohen's *d* effect size for differences shows that the differences in conscientiousness are strong, in openness to experience - moderately strong and in extraversion - weak. There are no significant differences, at least at the level of the statistical trend, with regard to neuroticism and agreeableness, which means that the groups analysed exhibit a similar level of those traits.

Table 2.

**Differences in personality traits (raw scores) between swimmers  
and non training persons**

|                                   | swimmers<br>(n =30) |      | non-training<br>persons | t     | P      | 95% CI |       | Cohen's d |
|-----------------------------------|---------------------|------|-------------------------|-------|--------|--------|-------|-----------|
|                                   | M                   | SD   | M                       |       |        | LL     | UL    |           |
| <b>Neuroticism</b>                | 19.97               | 8.46 | 21.59                   | -1.05 | 0.302  | -4.78  | 1.54  | 0.19      |
| <b>Extraversion</b>               | 30.63               | 5.75 | 28.64                   | 1.90  | 0.068  | -0.15  | 4.14  | 0.35      |
| <b>Openness to<br/>experience</b> | 24.67               | 5.35 | 28.60                   | -4.03 | <0.001 | -5.93  | -5.93 | 0.74      |
| <b>Agreeableness</b>              | 27.47               | 5.77 | 25.85                   | 1.53  | 0.136  | -0.54  | 3.77  | 0.28      |
| <b>Conscientiousness</b>          | 33.10               | 6.01 | 27.09                   | 5.47  | <0.001 | 3.76   | 8.26  | 1.00      |

In the next step, an analysis similar to the previous one was performed. This time, however, the comparison was made between the volleyball players and non-training persons. A Student's t-test for one sample revealed that these groups were different in terms of neuroticism, extraversion, openness to experience and conscientiousness. Volleyball players are characterised by higher levels of extraversion and conscientiousness, whereas non-training persons are more neurotic and open to experience. The strongest differences are those in relation to extraversion and openness to experience, while differences related to the other factors are moderately strong. The statistically insignificant result concerning agreeableness means that the groups compared did not differ in this regard.

Table 3.

**Differences in personality traits (raw scores) between volleyball players and non-  
training persons**

|                                   | volleyball players<br>(n = 30) |      | non-training<br>persons | t     | P      | 95% CI |       | Cohen's d |
|-----------------------------------|--------------------------------|------|-------------------------|-------|--------|--------|-------|-----------|
|                                   | M                              | SD   | M                       |       |        | LL     | UL    |           |
| <b>Neuroticism</b>                | 19.43                          | 5.67 | 21.59                   | -2.08 | 0.046  | -4.28  | -0.04 | 0.38      |
| <b>Extraversion</b>               | 31.03                          | 2.75 | 28.64                   | 4.77  | <0.001 | 1.37   | 3.42  | 0.87      |
| <b>Openness to<br/>experience</b> | 24.13                          | 3.79 | 28.60                   | -6.51 | <0.001 | -5.92  | -3.09 | 1.19      |
| <b>Agreeableness</b>              | 27.37                          | 5.35 | 25.85                   | -1.30 | 0.202  | -3.27  | 0.72  | 0.24      |
| <b>Conscientiousness</b>          | 31.67                          | 6.14 | 27.09                   | 2.70  | 0.011  | 0.73   | 5.32  | 0.49      |

In the next step a number of Wilcoxon tests for one sample were performed. The choice of a non-parametric analysis was dictated by the fact that the results of personality traits converted into sten scores were analysed. It was checked, using this test, whether there

were any statistically significant differences in terms of sten scores for personality traits between swimmers and non-training persons. It turned out that such differences did exist with respect to extraversion, openness to experience, agreeableness, and conscientiousness. Swimmers achieved higher sten scores on the scales of extraversion, agreeableness and conscientiousness, while non-training persons only on the scale of openness to experience. The measure of the effect size  $r$  for differences indicates that these are at most moderately strong differences. There were no differences with respect to sten scores for extraversion; therefore the groups compared were within a similar range.

Table 4.

**Differences in personality traits (sten scores) between swimmers and non training persons**

|                               | swimmers (n = 30) |      |      | non-training persons | Z     | p      | R    |
|-------------------------------|-------------------|------|------|----------------------|-------|--------|------|
|                               | M                 | Mdn  | SD   | Sten score           |       |        |      |
| <b>Neuroticism</b>            | 5.17              | 5.50 | 2.15 | 5.00                 | 0.43  | 0.670  | 0.05 |
| <b>Extraversion</b>           | 6.07              | 6.00 | 1.74 | 5.00                 | 2.92  | 0.003  | 0.38 |
| <b>Openness to experience</b> | 4.30              | 5.00 | 1.73 | 5.00                 | -2.10 | 0.036  | 0.27 |
| <b>Agreeableness</b>          | 5.93              | 6.00 | 2.08 | 5.00                 | 2.04  | 0.042  | 0.26 |
| <b>Conscientiousness</b>      | 7.07              | 7.00 | 1.62 | 5.00                 | 4.36  | <0.001 | 0.56 |

As regards the comparison between the volleyball players and the non-training group, it turned out that they differed with regard to sten scores for extraversion, openness to experience, agreeableness and conscientiousness. This time the group of volleyball players also obtained higher scores for extraversion, agreeableness and conscientiousness, and lower scores for openness to experience, which means that they exhibit a higher level of extraversion, conscientiousness and agreeableness in the sten score range, while non-training persons - a higher level of openness to experience. The measure of the effect size  $r$  for differences indicates that these are moderately strong differences. The subjects did not differ with regard to neuroticism.

## Discussion

A factor determining the personality of an individual is his or her environment [Pervin, 1993; Plomin, 1994; Ridley, 2003, s. 664-668; Cervone and Pervin, 2011, s. 22]. Thus, for athletes it is the sport discipline that they practise. Of great importance is also the impact of the nature of this discipline - i.e. whether it involves individual or team rivalry. An analysis of research data concerning the personality of swimmers and volleyball players reveals a lack of difference with respect to personality traits. Athletes practising individual disciplines and those practising team sports do not exhibit different traits. Taking into account the previous studies on the personality of athletes [Garland et al. 1990, s. 355-370; Rychta, 1992, 1998, s. 275-322; Chirivella et al. 1994, s. 777-786; Piedmont et al. 1999, s. 769-777; Busato et al.

2000, s. 1057-1068; Szmajke and Wlazło, 2001, s. 89-102; Bernatek et al. 2006, s. 50-57; Bleidorn et al. 2010, s. 366-379; Shrivastaval et al. 2010, s. 39-42; Ilyasi et al. 2011, s. 527-530; Singh et al. 2012, s. 11-16; Piepiora et al. 2017, s. 52-55] an attempt was made to compare the results of these studies.

It follows from a meta-analysis that differences in personality traits (neuroticism, extraversion, agreeableness, conscientiousness and openness to experience) are likely to occur between training and physically inactive individuals. These differences manifest themselves on the scales of neuroticism (this trait has higher values in non-training persons), conscientiousness and extraversion (non-training persons achieve lower scores for this factor). Researchers from Slovenia and Croatia have also confirmed these findings in their own studies [Kajtna et al. 2004, s. 24-34].

In summary, one should note the significance of the fact that the personality model of a given athlete practising an individual or team discipline is a result of a long-term training process, both mental and physical, and the adaptation of his or her body to training on the edge of his or her capacity. Other components are the choice of a sport discipline as well as individual preferences and predispositions of the training individual.

Differences in the data obtained may be due to the nature of the discipline practised by an athlete. Swimming, as an individual discipline, requires a very high level of conscientiousness on the part of the training person. It is the young athletes themselves that have to work for their success, without being able to count on their teammates when they are having a bad day. They are expected to have very good organisational skills, diligence and persistence in overcoming barriers. Similar expectations are placed on athletes practising volleyball, which is, however, a completely different kind of discipline. First of all, it is a team discipline, where an individual may count on the support of his teammates on the field. As a result, they are more oriented towards another person and willing to help.

In addition, differences between non-training persons and athletes may be due to their respective lifestyles and to the specific nature of competitive (professional) sport. Athletes, in the broad sense, are willing to make sacrifices. In team disciplines they need to be oriented towards another person, in order to make a joint effort to achieve victory. They are subjected to pressure from the environment and from the supporters and spectators counting on them.

## **Conclusions**

1. The young athlete personality model is characterised by a medium level of neuroticism, extraversion, openness to experience and agreeableness. The distinguishing indicator is a high level of conscientiousness in athletes practising sport on a competitive level.
2. Athletes practising individual (swimming) and team (volleyball) disciplines have a similar personality profile.
3. A comparison of the raw scores of volleyball players and swimmers revealed slight (statistically insignificant) differences on the scale of conscientiousness, with swimmers being more conscientious. No differences were noted with regard to neuroticism, extraversion, openness to experience and agreeableness.
4. An analysis of the results of non-training persons in comparison with training individuals indicates that persons not engaging in physical activity are more neurotic

and open to experience than training athletes as well as less extrovert, agreeable and conscientious.

5. It may be concluded from the study that sport is the determining factor in the evolution of athletes' personality - sport in its entirety, not particular disciplines.

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### *Summary*

**Background and aim:** This article concerns a topic in the field of sport psychology. Its purpose was to create a young athlete personality model and to identify differences regarding this model among individual and team sport athletes. **Material and methods:** The young athlete model was developed using the five-factor personality inventory (NEO-FFI). The test sample consisted of boys (N = 60) aged 16-18, who engaged in competitive volleyball (N = 30) and swimming (N = 30). **Results:** The results of the study led to the conclusion that the young athlete model based on NEO-FFI is characterised by a medium level of neuroticism, extraversion, openness to experience and agreeableness, while the element determining success and, at the same time, distinguishing training from non-training persons is the degree of conscientiousness. **Conclusions:** In addition, individual sport athletes do not differ in their personality profile from team sport athletes. The final conclusion drawn is that the personality of an athlete is shaped by sport in the broad sense and not by particular sport disciplines.

**Key words:** sport psychology, personality, NEO-FFI, volleyball, swimming

## **MODEL OSOBOWOŚCI MŁODEGO SPORTOWCA NA PRZYKŁADZIE WYBRANYCH DYSCYPLIN SPORTOWYCH**

### *Streszczenie*

**Zasadność i cel:** Artykuł dotyczy tematu z zakresu psychologii sportu. Jego celem było stworzenie modelu osobowości młodego sportowca i określenie różnic dotyczących tego modelu wśród sportowców indywidualnych i drużynowych. **Material i metody:** Model młodego sportowca został opracowany przy użyciu pięcioczynnikowego inwentarza osobowości (NEO-FFI). Badana próba składała się z chłopców (N = 60) w wieku 16-18 lat, którzy trenują wyczynowo siatkówkę (N = 30) i pływanie (N = 30). **Wyniki:** Wyniki badania doprowadziły do wniosku, że młody sportowiec opisany według metody NEO-FFI charakteryzuje się średnim poziomem neurotyczności, ekstrawersji, otwartości na doświadczenie i ugodowości, a jednocześnie elementem determinującym sukces i odróżniającym trenujących od osób nietrenujących jest stopień sumienności. **Wnioski:** Ponadto sportowcy indywidualni nie różnią się pod względem profilu osobowości od sportowców drużynowych. Ostateczny wniosek jest taki, że osobowość sportowca kształtowana jest przez sport w szerokim znaczeniu, a nie przez poszczególne dyscypliny sportowe.

**Słowa kluczowe:** psychologia sportu, osobowość, NEO-FFI, siatkówka, pływanie