

DIFFERENCES BETWEEN COMPETITIVELY EFFICIENT AND LESS EFFICIENT JUNIOR HANDBALL PLAYERS ACCORDING TO THEIR PERSONALITY TRAITS

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Abstract:

The Eysenck's personality questionnaire for evaluating extroversion-introversion, neuroticism, psychoticism and dissimulation was applied on the sample of 72 junior handball players, aged 17-18 yrs, with the purpose of establishing the differences between efficient and less efficient players according to their personality traits. The evaluation of competition performance was done on the basis of basic game statistics parameters of performance in attack for each player during four played games. Multivariate analysis of variance revealed no statistically significant differences between the efficient and the less efficient handball players according to their personality traits, except for the variable dissimulation, in a way that the more efficient handball players appeared to have lower results on the dissimulation scale. This fact, and also a higher self-respect, is probably due to their striving to support the image of their dominant status within the given setting. The results of the correlation analysis between personality variables show that there is no statistically significant connection between the variables of personality traits, except between dissimulation and psychoticism.

Key words: *Eysenck's personality questionnaire, extroversion-introversion, neuroticism, psychoticism, dissimulation, handball junior players*

Introduction

The contemporary handball game, characterized by high intensity motor activities, places upon players a wide spectrum of requirements on all their capabilities. One can hardly single out any ability or a characteristic which is not engaged in the performance of handball players. Basic and specific motor abilities and cardio-respiratory capacities, such as explosive strength, required at the start line, a paramount amount of sprinting and maximum jumping in defence and attack, are specifically significant, or coordination, necessary for the performance of specific motor assignments and space orientation, as well as agility and speed which are indispensable for the efficient solving of game situations. A high level of aerobic capacity ensures the slower onset of fatigue and a fast recovery, whereas anaerobic capacity is responsible for endurance in high intensity repetitive activities.

The current sport development and demands on athletes impose a need to study sport from the aspects of all the disciplines that are components of sport science (Abernethy, 2005; Morrow & James, 2005). Considering the fact that top-level athletes tend to equalize ever more among themselves in many relevant elements of sport fitness (condition-

ing, technical, tactical and others), psychological and, especially, motivational factors play an ever more decisive role in a competition, differentiating between successful and less successful teams. Due to this fact, more significance has recently been given to the psychological characteristics of athletes, as to the essential determinants of sport efficiency.

Researchers have so far determined the significance of motivation level and the usage of different approaches in motivating athletes by exogenous agents (Seifriz, Duda, & Chi, 1992; Mead, Drowatzky, & Hardin-Crosby, 2000), but also of the positive influence of sporting activity on the stabilization of psychological traits and moods, as well as of the significant positive connection between the level of physical potential/condition and psychological stability (Berger, Grove, Prapavessis, & Butki, 1997). It has also been determined that the level of aggressiveness in players rises with the frequency of competition matches, that is, the repeated competitions, being emotionally demanding situations, provoke the manifestation of aggressive behaviours in players (Widmeyer & McGuire, 1997). The psychological features of athletes are, to a certain extent, subjected to the influence of the cultural and social environment (Kran & Baird, 2005) as well as

to the level of intensity of engagement in a sporting activity and the way of exercising (Koltyn, Lynch, & Hill, 1998; Bartholomew, 1999). Some research studies are directed towards the analysis of psychological manifestations of top-level athletes in critical situations (a crisis) during a competition (James & Collins, 1997; Wiggins, 1998) and some towards the defining typical situations in which athletes emphatically demonstrate anxiety (Dunn & Nielsen, 1996). Only a small number of researches are directed towards the analysis of relations between the personality traits of athletes and their successfulness in the situational conditions of a competition (Thompson & Perlini, 1998; Beedie, Terry, & Lane, 2000).

Recently, apart from this one, no research on the relations between personality traits and performance in handball has been conducted. Based on the assumption that situational efficiency during a match depends on the players' personality traits and also influenced by the deficiency in scientific knowledge in this area, the aim of this research is to determine the differences in the personality traits of the efficient and the less efficient junior handball players during a handball match.

Methods

Sample of subjects - handball players

The research was carried out on a sample of 72 subjects, members of eight handball teams which participated in the Croatian Junior Handball Championships finals held in Split in 2001. At the level of the population of handball players of this age, the subjects illustrated a representative sample from the aspect of playing quality, considering that it comprised all the best junior handball players in Croatia. The age of the subjects was between 17 and 18 years. According to the Ethical Codex of the Croatian Chamber of Psychology, the measurement of personality traits was carried out by a psychologist, one of the authors of the paper (M.N.).

The subjects voluntarily and anonymously took part in the research, with the consent of their coaches and clubs' managements, as well as with the parents' informed consent for the players younger than 18 years of age.

Personality traits

For the purpose of assessing personality traits, the Eysenck's factor multidimensional personality questionnaire, consisting of 90 questions, was applied (Eysenck & Eysenck, 1994, 2003). The characteristics of the questionnaire are: economy, standard application, objectivity, practicality and simple instruction. The questionnaire analyses 4 variables, i.e. personality traits or psychological factors: *extroversion-introversion* (EPQE), *psychoticism* (EPQP), *neuroticism* (EPQN) and *dissimulation* (EPQL).

Questions in this questionnaire were formulated on a single-item principle with either yes or no as possible answers, so that each answer defining a particular personality trait carries one point. The sum of points represents the final score for a particular personality trait.

Measures of handball efficiency/ performance

To evaluate the performance of the players in the game, the authors observed four games and registered the basic statistical parameters of the situation-related efficiency for each player in attack through a specially designed protocol. For the field players the parameters of efficiency in attack were registered (goals scored, forced opponents' suspensions, forced 7m throws) together with the parameters of inefficiency in attack (inaccurate shots, mistakes in the organization of an attack, mistakes in realization), while for a goalkeeper, the parameters of defensive efficiency (number of saves) and inefficiency (number of goals received) were registered. Evaluation of the players' performance in the games was done by a modified procedure (Rogulj, 1997).

This procedure was based on the weights obtained by the calculation of the goal scoring possibility in attacks, which contains various situation-related parameters, as well as on the calculation of their regressive contributions, i.e. the contributions of these parameters to the final outcome of a handball match. The value of weights was determined on a relevant sample of top-level handball games.

Variables of situation-related efficiency/ performance	Weights
a goal scored	2
a forced penalty throw (a 7m-throw)	1.5
a forced suspension of the opponent	1
a mistake in organizing the attack	-1
a missed shot (inaccurate shots)	-1
a goal received (for the goalkeeper)	-1
a shot saved (for the goalkeeper)	2

The frequencies of an individual handball player's situational efficiency parameters, occurring during a match, were multiplied by the weight for a particular parameter and then summarized. In that way quantitative cumulative values were obtained for each match. Since the players were observed during four matches they played against each other, the arithmetic means, i.e. the average value of points per match was calculated, which in the end forms the criterion variable for dividing the handball players into a group of more and a group of less efficient players (CRIT).

Data analysis

Within the basic descriptive statistic, the following parameters were determined: arithmetic mean (AM), minimum and maximum value (MIN, MAX), and standard deviation (SD). Normality of the distribution was tested by the Kolmogorov-Smirnov procedure (MAX D).

The differences between the groups in personality traits were determined by a multivariate analysis of variance (MANOVA). The subjects were divided into two categories according to the mean split criterion: the efficient – the subjects that achieved, in the criterion variable, an above-average number of points, that is equal to or larger than the arithmetic means of the whole sample (the average number of points ≥ arithmetic mean), and the inefficient - the subjects that achieved, in the criterion variable, an under-average number of points, that is smaller than the arithmetic means of the whole sample (the average number of points < arithmetic mean).

The relations between the predictor variables were defined by the Pearson’s correlation coefficient.

Results

Table 1 presents the basic descriptive parameters of personality and performance of handball players.

It is evident that all the predictor variables, the same as the criterion variable, are normally distributed, i.e. they do not deviate significantly from the normal distribution and therefore were suitable for further multivariate processing.

Table 2 presents the results of analysis of variance. There are no statistically significant differences between the efficient and the less efficient groups of handball players according to the variables of personality traits, except in *dissimulation* at a level of 0.05.

Table 1. The results of descriptive analysis of personality and efficiency of handball players

Variable	AM	SD	MIN	MAX	MAX D
EPQP	5.25	2.46	1	11	.16
EPQE	16.05	2.98	8	21	.13
EPQN	9.36	4.35	2	21	.09
EPQL	7.61	3.94	1	18	.11
CRIT	11,04	4,75	1	30	.17

Test= .19

Legend: AM - arithmetic mean, SD - standard deviation, MIN - minimal value, MAX - maximal value, MAX D - maximal deviation of relative cumulative empirical frequency from relative cumulative theoretical frequency, TEST - criterion value of the Kolmogorov-Smirnov test for testing the normality of distribution at the error tolerance level of 5%, EPQE - extroversion-introversion, EPQP - psychoticism, EPQN – neuroticism, EPQL - dissimulation

Table 2. The analysis of variance between efficient and less efficient players

Wilks' Lambda	Rao's R	df 1	df 2	p-level
.92	1.37	4	67	.25
Variable	AM (less efficient)	AM (efficient)	F	p
EPQP	5.36	5.14	.14	.71
EPQE	15.80	16.30	.50	.48
EPQN	9.72	9.00	.49	.49
EPQL	6.64	8.58	4.6	.03

Legend: Wilks' λ - Wilks' lambda value, Rao's R – Rao's value, df1/df2- respective values of the degree of freedom, p – significance level, AM - group arithmetic means, F - F values of statistical significance testing, EPQE - extroversion-introversion, EPQP - psychoticism, EPQN – neuroticism, EPQL - dissimulation.

The results of the correlation analysis between the predictor variables are presented in Table 3. It is evident that there is no statistically significant connection between the variables of personality traits, except between *dissimulation* and *psychoticism*.

Discussion and conclusions

The average values of personality traits (Table 1) to a great extent match the results obtained in other researches that were performed on various samples of non-athletes of this age in the Republic of Croatia (Kardum, Hudek-Knežević, & Kalebić, 2004; Bratko, 2002). Compared to their peers, young handball players achieve only slightly higher values on the extroversion scale, and slightly lower values on the rest of the scales.

It is evident (Table 2) that some differences in playing quality cannot be explained on the basis of personality traits. Namely, performance in a handball game depends on the large number of various anthropological features of a player, on the level of motor and physiological abilities, motor knowledge and skills, and tactical efficacy (Srhoj, 2002).

Given the sample that is comprised of the Croatian top-level junior handball players, i.e. only those players who have won the right to perform in the final tournament through the preliminary competition, it is possible to assume that the players do not notably differ in their situational efficiency. Regarding the fact that the subjects are not significantly polarized in their playing quality, it is reasonable to conclude that there were also no significant differences between the anthropological characteristics of these players, and therefore in personality traits, since it is known that precisely these anthropological characteristics mostly determine players' playing quality (Katić, Grgantov, & Jurko, 2006; Milanović, Jukić, & Dizdar, 1996).

It is also important to bear in mind that handball is a team sports game in which performance does not depend only on the engagement of a team in attack, but also of the engagement in defence as well (Rogulj, 2003). Therefore, the influence of the opponents, who are also equalized in their quality, additionally levels the situational efficiency parameters between the groups.

In addition to this, the research was conducted under the conditions of competition, i.e. in an emotionally strenuous stimulation that could affect the psychological status of the subjects.

The statistically significant difference, at the level of .05, between the two qualitative groups of young handball players is present in the variable *dissimulation*, in favour of the more efficient players.

The difference between the more and the less successful young handball players in the *dissimulation* variable can be explained indirectly through the level of self-respect. Namely, the superior players have probably formed a better self-image and a higher dosage of self-respect, which could spoil honest response. Unlike them, the less successful players might be more self-critical, re-examining themselves constantly, and so they do not distort their own image while giving honest responses. This presumption may be a guideline for further research which should examine the relation between self-respect and efficiency, performance in the game of handball.

In Table 3, which contains the coefficients of correlations between personality traits variables, mainly insignificant values of correlations with a negative sign are noticeable. The structure of correlation matrix leads to the conclusion that these psychological variables are autonomous, so that this research supports Eysenck's theory assumption that these personality dimensions are orthogonal. Only statistically significant correlation with a negative sign is present between *psychoticism* and *dissimulation*. It is possible to assume that young handball

Table 3. Correlations between personality variables

	EPQP	EPQE	EPQN	EPQL
EPQP	1	,01	18	-,31*
EPQE		1	-,09	-,08
EPQN			1	-,17
EPQL				1

*p>0.1

Legend: EPQE - extroversion-introversion, EPQP - psychoticism, EPQN - neuroticism, EPQL - dissimulation

players who achieve lower values on the psychoticism scale will give socially acceptable answers, and vice versa. This correlation was both influenced by the players with the lower level of psychoticism that are mainly players who show a higher efficiency during a game and are interested in socially desirable behaviour, and by the players with a lower level of situational efficiency and a higher level of psychoticism, i.e. the ones who are emotionally directed towards themselves and do not feel the need for improving their social image.

To conclude, the results of multivariate analysis of variance revealed that there were no statistically significant differences between the handball players ranked in the two qualitative groups based on their situational efficiency in attack, except for the variable *dissimulation*. More efficient players appear to achieve worse results on the *dissimulation* scale, which is probably the consequence of their striving to support, through socially eligible conduct, the image of their dominant status within the given setting and a higher level of self-respect. The results of the correlation analysis point to the absence of a significant correlation between the analysed personality traits variables, which is congruent with the presumptions of the Eysenck's personality theory and confirms the already proved autonomy of thus defined personality traits dimensions.

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