

The Influence of Somatotype Components and Personality Traits on the Playing Position and the Quality of Top Croatian Female Cadet Handball Players

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ABSTRACT

The research was conducted with the aim to establish the structure and the differences of morphological features and personality traits between different age groups of female cadet handball players grouped by their playing quality and playing positions. Further on, the research was done on 70 handball players aged 15, 31 on average, who were grouped according to their positions on goalkeepers, outside players, wings and pivots. Furthermore, according to the quality of playing, they were divided in two quality groups of players, those from the wider cadet national team, thus characterised as top female players in Croatia, and those who had never been invited into the cadet national team and thus can be referred to as low-quality, i.e. average female handball players. The structure of predictor variables has indicated the existence of general morphological factor assessing the players' constitution and two personality features factors – neuroticism and extraversion. The variance analysis showed no statistically significant differences of somatotype variables with relation to quality and playing position. By observing basic personality traits, a statistically significant difference was confirmed only in introversion-extraversion with a lower score in goalkeepers than in other positions, which indicates a higher level of introversion in this playing position. Such result was expected since this particular position abounds in specific tasks and demands in the game in relation to all other playing positions. Further on, it has been concluded that the selection of players must not be based only on the stated physical and psychological characteristics, but on relevant anthropological complexes determining performance and sport achievement.

Key words: female handball players, positions, quality, personality traits, somatotype

Introduction

The term personality of (fe)male handball players in the wider sense includes cognitive abilities, personality traits, temperament, motor-functional abilities and morphological characteristics. We consider that morphological structure and personality profile in elite sport differentiate players in positions and roles in the game, and in this way indirectly determine duties and tasks in the game¹.

LeUnes (2008)² refers to the constitutional Sheldon's theory^{3,4} where somatotypes or the types of physical constitutions are personality predictors. At the same time, it is important to stress that Sheldon developed empirical

basis for the structural personality theory where personality is determined by the physical structure. Based on 17 anthropometric measures, Sheldon defined 76 somatotypes which he later on summarized in 3 basic types (ectomorphic, endomorphic and mesomorphic)^{3,4}. The stated terms are used in typologies and constitutional theories.

Sheldons ectomorph characterised by LeUnes (2008)² and angularity build, responds behaviorally with a high level of activity, tension and introversion. On the other hand, the same author indicates that the classic mesomorph is likely to be very muscular and athletic, and re-

sponds to environmental stimuli with aggression, risk taking and leadership. In addition to this, LeUnes (2008)² explicitly shows that endomorphic types have rounder body type than the others and reacts behaviorally with joviality, generosity, affection and sociability. Clearly the three somatotypes are stereotypes, and as such they suffer from all of the shortcomings of such narrow conceptualization. Further on, Eysenck, Nias and Cox (1982)⁵ analyse Sheldon's theory in relation to sport and claim that body-build of typical successful athlete is mesomorphic, a type of physique usually associated with extraverted personality types. At the same time, the stated authors indicate that the relationship appears stronger with the physical than with the personality type. They also claim that ectomorphic body types can also be found among successful sportsmen, although not as frequently as mesomorphic body types, and never in extreme form. Further on, endomorphic body forms are practically never found among sportsmen and women, with the possible exception of swimmers. Even there the endomorphic component is not likely to be strong. In accordance with stated issues, Eysenck, Nias and Cox (1982)⁵ claim that body type is quite markedly related to type of sport, with long-distance runners being relatively ectomorphic, and wrestlers and weight-lifters being strongly mesomorphic). Short distance runners seem to be intermediate between the other two groups.

This research is connected with Eysenck's P-E-N personality model⁶. Empirical researches indicate the importance of two core dimensions in sport engagement⁵ – extraversion and neuroticism. The same authors state that a possible reason for the connection between psychoticism and sport efficiency might be aggressiveness and competitiveness of an individual. Individuals with a high level of egocentrism are likely to harm the cohesiveness in team sports since interaction sports require cooperation unlike individual sports. Eysenck, Nias and Cox (1982)⁵ state that psychoticism in sport is adaptive. Competition team sports require interaction, stimulate inspiration, therefore athletes with a high level of extraversion are likely more inclined towards team sports involving risky behavior, excitement and aggressiveness⁷. Additionally, Ingledew, Markland and Sheppard (2004)⁷ suggest the importance of extraversion and neuroticism in the regulation of behavior while exercising.

Morgan (1979, 1980)^{8,9} and Morgan et al. (1988)¹⁰ have, within the interaction model, arrived to a conclusion there is a difference between a psychological profile of efficient and inefficient athletes. Based on research findings, the authors indicate that top athletes are characterized by a low level of anxiety and neuroticism, and a high level of extraversion.

Further on, researches show that athletes who have achieved the national level of efficiency have a lower result in anxiety, and a higher level of extraversion markedness than the group of non-athletes¹¹.

At the same time, empirical findings show that two personality factors are important for efficient sport per-

formance: neuroticism (lower result) and extraversion (higher result)^{7,12–14}.

It is essential to stress that researches of basic and specific personality traits in interactive sports with a ball are very rarely conducted on representative samples^{2,5,15–17}.

Previous empirical findings show lower results on neuroticism scale, and higher results in extraversion in team sport athletes^{5,18}.

At the same time, it is important to stress that personality traits and motivation factors are connected with the functioning of athletes in a group^{19–20}. Further on, the obtained results show that athletes, regardless on the type of sport, are more extrovert than non-training population⁵.

Furthermore, we need to stress that genetic factors determine both personality and physical constitution^{5,21} to a large extent. Further on, it was revealed that competence in different sport activities has a strong genetic competence. At the same time, they claim this does not suggest that training will not help people in improving their performance, but that in general selection for sport performance, particularly for certain types of sport, one should take into consideration personality and physical constitution.

In addition to this, Eysenck, Nias and Cox (1982)⁵ claim that genetic factors are known to determine to large extent both personality and physique; it has also been shown that competence in many different sporting activities has a strong genetic component. They also state that d.d. this finding does not suggest that training cannot help people to improve their performance, but it does suggest that selection for sport in general, and for specific types of sport in particular, should take account both of personality and physique.

In accordance with stated issues, Davids and Baker (2007)²² indicate that elite athletic performance cannot be exclusively attributed to the influence of genes (i.e. nature) and environment (i.e. nurture). The same authors claim there are theoretical basis for the explanation of the interactive influence of genetic and environmental factors on elite athletic performance.

Further on, Enyon et al. (2011)²³ refer to recent researches showing that more than 200 genetic variations are connected to physical performance or as a feedback to training, while only 20 polymorphisms are specifically connected to top sport status.

In handball, morphological characteristics significantly influence the determining of the position and the role in the game of a certain player^{24–26}. Morphological characteristics in the interaction with other dimensions forming the anthropological status of a certain player determine performance and sport efficiency. Based on the morphological structure, in any handball player one may determine the portion of ectomorph, mesomorph and endomorph constitution²⁵. In accordance to this, ectomorphism in a handball player's constitution suggests to an expert coach and a player to direct the process of sport

preparation to selective hypertrophy (e.g. the increase of the quantity of the active muscle mass, the changing of proportions between slow and fast muscle fibers). On the other hand, if the level of endomorphism is raised in a certain type of a (fe)male player, the process of sport preparation must be directed towards the reduction of muscle mass²⁵.

The data on the state of morphological features in handball players during the process of sport preparation are multiply useful in the assessment of: training, anthropological status, potential of a certain player both with relation to normative and model values for a certain age^{25,27}.

In contemporary handball game, the structure of morphological characteristics and personality traits, the playing position and the quality of female handball players, make the basis for comparative analyses of players and teams²⁵. The stated issue asks for the optimization of the morphological structure and personality traits of a certain type of a (fe)male player and the stimulation of development of the actual quality of a player. The research findings indicate that the morphological status and the personality profile can differentiate players by their positions²⁵.

In the end, efficiency in handball game depends on the interaction of internal and external factors and on the connection between the scientific and the professional approach as a fruitful combination enabling to rationally manage the process of sport preparation. The playing potential observed through morphological, motor, psychological and sociological features of players must be in accordance to the kinesiological demands of this collective game with a ball. Scientific knowledge suggests that certain anthropological features have a significant influence on situation-related and result efficiency in handball^{28–30}. Specific physical conditions and kinesiological structure of elements in the handball game contributed to the modeling of the characteristic anthropological complex in top (fe)male handball players which is primarily manifested in the optimal development of motor-functional, psychological and morphological features^{27,29,31–32}.

Materials and Methods

Subjects sample

The sample of subjects was defined as the set of female handball players in the Republic of Croatia, aged 15,31 on average, belonging to the age group of cadets. The research was conducted in 2010 on the sample of 70 (seventy) subjects, the members of the following handball clubs: *Sinj* (Sinj), *Podravka Vegeta* (Koprivnica), *Karlovac* (Karlovac), *EMC Split* (Split), *Sesvete Agroproteinka* (Sesvete), *Cerna* (Cerna), *Bjelovar* (Bjelovar), *Opatija-Liburnija* (Opatija), *PAN Đakovo* (Đakovo), *Vranjic* (Vranjic), *Orijent Presoflex* (Rijeka), *Koka* (Varaždin), *Lokomotiva* (Zagreb), *Dalmatinka* (Ploče), *Knin* (Knin) and *Željezara* (K. Sućurac). The subjects were measured in the second part of the competition period.

According to their position in the game, the subjects involve 9 goalkeepers, 30 outside players, 20 wing players and 11 pivots. Further on, out of the total number of subjects, 34 belong to the wider national team group of players, therefore we can consider them as above-average female handball players in the Republic of Croatia, while 36 had never been invited into the cadet national team, so they are considered to be low quality, i.e. average handball players.

In addition to the playing quality and age, another condition to take the test was that all the subjects were clinically healthy and without any expressed motor aberrations, and that they took the test voluntarily.

Variables sample

Two groups of variables were employed, i.e. morphological and psychological sets of variables.

– on assessment of somatotype components (by use of Heath-Carter procedure)³³, the following morphological measures were employed: body height (mm), elbow diameter (mm), knee diameter (mm), body weight (dkg), upper arm circumference in relaxation (mm), upper arm circumference in flexion (mm), lower leg circumference (mm), midarm skinfold (1/10 mm), back skinfold (1/10 mm), abdominal skinfold (1/10 mm) and lower leg skinfold (1/10 mm).

Psychologic characteristics were evaluated by Eysenck factorial multidimensional personality questionnaire³⁴ adapted to the age category of the subjects (the so-called Eysenck – Junior). The conducted questionnaire analysed 3 superfactors (basic or 'vast' personality traits: psychoticism, introversion-extraversion, neuroticism) and tendency towards dissimulation³⁵. In this questionnaire, the answers were formed as two-itemed with a possibility to confirm (yes) or reject a claim (no). In accordance with the ethic code of the Croatian Psychologists' Association, the examining of personality traits was conducted by a qualified psychologist.

Data analysis

Data processing included calculation of basic descriptive and distributional statistical parameters such as arithmetic mean (X), standard deviation (SIG), minimal and maximal result values (Min, Max), coefficient of skewness (a_3), distribution kurtosis (a_4). Distribution normality test was conducted by Kolmogorov-Smirnov test on the significance level $p < 0.01$. Differences in morphological and psychological characteristics between female handball player who achieved above average and female handball player who achieved average, and differences between four player position group, were determined by univariate variance analysis.

Latent variables of the morphological and psychological space were obtained by factor analysis on the model of main components, with varimax normalized rotations. The number of significant factors was determined by use of Guttman-Kaiser criterion, according to which a component with a variance exceeding 1.00 is considered sig-

TABLE 1
DESCRIPTIVE STATISTICS (N=70)

	X	Min	Max	SIG	a ₃	a ₄	MaxD
Somatotype							
Endomorphic component (points)	3.91	2.30	5.90	0.92	0.29	-0.62	0.08
Mezomorphic component (points)	3.30	0.10	5.70	0.96	-0.21	1.02	0.08
Ektomorphic component (points)	2.97	0.50	5.10	1.02	-0.12	-0.18	0.05
Psychological characteristics							
Psychoticism (points)	2.80	0.00	11.00	2.04	1.20	2.59	0.18
Extraversion (points)	18.09	12.00	24.00	2.74	-0.18	-0.47	0.13
Neuroticism (points)	10.14	3.00	18.00	3.71	-0.18	-0.88	0.13

a₃ – coefficient of asymmetry, a₄ – coefficient of distortion, MaxD – maximal deviation of relative cumulative empirical frequency from relative cumulative theoretical frequency (test=0.19)

nificant. Also, calculated correlation between the set of latent variables.

Somatotype components were calculated by Somatotype 1.2.5. computer programme for Windows, and data processing was done by Statistica ver. 7.1. programme.

Results

Table 1 displays basic statistical parameters separately for every morphological constitutional component and psychological variable.

The values from Kolmogorov-Smirnovljev test, in relation to the border value, show all the variables are normally distributed, which is important for the following statistical processing.

Comparing the data of the morphological domain to the results from other researches on the population of cadet female handball players in younger age groups³⁶ and in common children population³⁷, it has been defined they show no significant deviations. The comparison of the results in basic personality traits of female handball players aged 15 and the population of girls not engaged in any sport³⁵, shows similar results in the personality traits of psychotism and extraversion, while the result on the neuroticism scale in handball players is slightly lower. It is important to stress that research findings indicate that male and female athletes have a lower level of expressed neuroticism than non-athletes^{5,16,17,38}.

Factorization of the manifest variables of the morphological and psychological space produced characteristics roots (Expl.Var.) explaining the common variance of each individual factor. According to Guttman-Kaiser criterion, three factors explaining 81% of the common variance in total were isolated from the overall space of variables (Table 2).

The first varimax factor (Expl. Var. = 2.54) significantly correlates with all the variables for the assessment of skeleton constitution (mesomorphic, endomorphic and ectomorphic component). This factor represents the somatotype according to Heath and Carter and explains for 40% of the total system variance.

TABLE 2
STRUCTURE OF LATENT VARIABLES OF MORPHOLOGICAL SPACE AND PSYCHOLOGICAL CHARACTERISTICS (F)

	F1	F2	F3
Endomorphic	-0.87	-0.15	-0.06
Mezomorphic	-0.91	0.11	-0.04
Ektomorphic	0.97	0.03	0.01
Psychoticism	0.06	0.63	0.51
Extraversion	0.01	0.89	-0.16
Neuroticism	0.04	-0.06	0.92
Expl.Var	2.54	1.23	1.13
Prp.Totl	0.42	0.20	0.19
	F1	F2	F3
F1	1.00	0.19	0.20
F2	0.19	1.00	-0.18
F3	0.20	-0.18	1.00

Expl.Var.– particular component variance, Prp.Totl.– total amount of the explained system variance

The second extracted varimax factor (Expl. Var. = 1.23) is defined by a single variance assessing the core personality trait of extraversion. The factor describes for 20% of the total system variance of the applied variables of the morphological-psychological set.

The third varimax factor (Expl. Var. = 1.13) is defined by the personality feature of neuroticism (0.92), and the factor describes for 19% of the total system variance of the applied variables.

It is important to stress that the third Eysenck's personality trait is divided on the second and third factor and we may say that it is present to the same extent in neuroticism and extraversion.

The results of the variance analysis between the handball players of above-average and average quality and the players in different playing positions, in the variables of somatotype and the psychological domain, were displayed in Table 3.

TABLE 3
ANALYSIS OF VARIANCE BETWEEN PLAYER GROUPS OF DIFFERENT SITUATION EFFICIENCY AND DIFFERENT PLAYING POSITIONS (ANOVA)

	X		F	p	X				F	p
	average n=36	above-aver- age n=34			G n=9	B n=30	W n=20	P n=11		
Endomorphic	4.04	3.77	1.44	0.23	4.22	3.96	3.73	3.84	0.65	0.59
Mezomorphic	3.40	3.19	0.83	0.37	3.34	3.23	3.45	3.18	0.27	0.85
Ektomorphic	2.89	3.06	0.48	0.49	2.60	3.04	2.91	3.22	0.67	0.57
Psychoticism	3.17	2.41	2.44	0.12	1.89	3.27	2.85	2.18	1.49	0.22
Extraversion	18.06	18.12	0.01	0.93	15.78	18.73	18.10	18.18	2.91	0.04
Neuroticism	10.69	9.56	1.65	0.20	8.11	10.50	10.60	10.00	1.10	0.35

G – goalkeeper, B – back, W – wing, P – pivot

Discussion

By factor analysis (Table 2) in this research, we extracted three morphological-psychological factors: somatotype factor, extraversion factor and neuroticism factor. This kind of structure of the stated domains was expected. With regard to the fact this is a homogenous set of morphological variables representing human constitution, and is saturated by mutually connected muscle, bone and adipose component, it was expected that all three somatotype components will be recognized within one factor. Within psychological domain, there was a variables division in two factors: the factor of neuroticism and extraversion, which is explained by the fact that these two personality traits are not in mutual correlation and were therefore isolated within each own factors. Further on, the empirical findings show that particularly these two personality traits are essential for efficient sport performance^{7,12-14} and therefore are expressed through the structure of the personality traits.

Although the results of the difference analysis (Table 3) between low quality and quality players in somatotype variables were not statistically significant, by a detailed inspection of arithmetic means, it is evident the ectomorph component is more expressed in quality players which leads to a conclusion they are on average slightly taller and have slightly longer extremities. The endomorph component, as a result where the measures of adipose tissue were mostly saturated, is more expressed in average players. It is assumed such result is influenced by the sensitive puberty period. It is quite significant that top players at this age have slightly more adipose tissue than optimally, which is a kind of a ballast to the playing quality. Comparatively, mesomorphy is also more expressed in average players considering that with the measures of body volume we assess muscle mass, partly even adipose tissue as well.

Observing psychological variables, it is evident that, generally observing, there are no statistically significant differences between the groups of subject in relation to the studied three personality superfactors. The reason probably lies in the fact that the research included a rela-

tively homogenous set of entities since a group of female players is generally involved. Nearly the same results were obtained by Rogulj et al. (2006)³⁹ when researching two quality groups of junior male handball players. It is evident that personality traits were not anthropological characteristics with a high significance at this chronological age. Regardless of the stated fact referring to the three basic personality traits, it is likely that with the increase of the training and the competition stress growing with the level and the quantity of competitions, specific personality traits have more and more importance in performance and sport achievement¹. We established no statistically significant differences in playing positions in the variables for assessing ectomorphy, mesomorphy and endomorphy. By a detailed perception of the arithmetic means results of the ectomorph component, it is evident the outside players and pivots are dominantly and markedly dimensioned in the skeleton measures. It is a well-known rule the outside players should be the tallest ones (which is a basic characteristic of the ectomorph component), since their tasks in the game are connected to explosive jumps over the defence players. Their body height is, thus necessary, in addition to shooting tasks, to have the overview of the game (width and height of the field of sight) and perceptive speed manifested in the speed of position recognising and the reaction of the opponent and coplayers. Pivots also have a strong and robust constitution, which can be explained by the fact that they are practically constantly in the contact game with one to two opponent players. Wing attackers are weaker in the longitudinal dimension, i.e. they belong to the players with a shorter ectomorph constitution. The reason for this lies in the tasks in the game requiring from wing players to be the fastest, to competition the opponent in very little space. Thus, fast sprints, counter attacks, pivots entering the defence area, far take-offs in dive shooting require shorter height of the general centre of body gravity, and at the same time, lower values of the longitudinal skeleton dimension, i.e. ectomorphy.

By observing the endomorph component, we may notice that, though these are not statistically significant results, arithmetic means indicate there is an expressed

endomorphism in goalkeepers, which is most logical considering the training process, is markedly individualised and different in relation to other players. While other players perform their tasks through different forms of running and moving, a goalkeeper does not have particularly demanding trainings directed towards the development of endurance. The total loading is lower than in the field players, so we may assume this is one of the basic reasons why this particular position has the most expressed endomorph dimension in relation to other positions. Wing players have least problems with this component, and the reason probably lies in the specificity of the technical-tactical activities of his 'work place'. Namely, wing players have tasks in the game which require from a certain player fast and frequent sprints, explosive jumps, and further on, with regard to the position in the field, they run the longest distance, so their aerobic and anaerobic endurance is more developed, which has a positive influence on the reduction of ballast mass and endomorphy at the same time.

Mesomorph component was also not considered to be statistically significant with regard to the position in the game, which can be attributed to the importance of the muscle mass in all playing positions where positions with a more developed musculature cannot be separated from the positions with a less developed musculature. Every playing position, regardless of its varieties, imposes certain demands to a player, by which it influences the development of musculature component.

By inspecting the variance analysis, it is evident that in personality traits, with regard to the playing positions, there are no statistically significant differences, except in the variable for assessing introversion-extraversion. Extraversion is one pole in the introversion-extraversion personality dimension characterised by a tendency towards being sociable, friendly, impulsive and risk taking, versus introversion which is characterised by a tendency towards being quiet, reserved, inclined towards thinking and risk avoiding^{21,40}. In the previous researches extraversion, as a basic personality trait, was more extensively present in athletes' population in relation to non-athletes¹⁴, and within handball playing positions, more values in this dimension was achieved by players in wing positions (Rogulj et al. 2006)³⁹. By observing arithmetic means, we notice a high score of introversion in the goalkeeper position in relation to other positions in the game. The role and the position of the goalkeeper may indicate their space isolation which in a long-term training process might stimulate personality mechanisms in the background of introversion. We consider that a goalkeeper has a specific role and a playing position since he has his own space and, to a major extent, his defence efficiency does not depend on the interaction with his co-players, but only on himself. When the team is in the attack position, the goalkeeper does not participate in this part of the game since he is a »passive observer« which greatly differs this position from other playing positions.

Therefore, it is not surprising that goalkeepers show higher results in introversion. Additionally, trainings of

goalkeepers' positions are specific and essentially different from the others and this must influence the formation of their particular anthropological complex. It is important to stress that personality and environment factors constantly affect each other and that more recent researches are directed towards particular processes linking genetic, family and social influences on the personality development during the important years of adolescence^{41,42}. Genetic researchers state that genetics and environment are always in interaction^{21,40}. At the same time, the genetic researchers distinguish three particular forms of gene-environment interactions^{45,46}.

First, the same environmental experiences may have different effects on individuals with different genetic constitutions. In a second kind of nature-nurture interaction, individuals with different genetic constitutions may evoke different responses from the environment.

Furthermore, in the third of gene-environment interaction, individuals with different constitutions select and create different environments.

We consider that training and competition stress has different influences on certain athletes, who are determined by an ability to adapt which is most probably generated by the genetic structure of the individual and by the process of sport preparation. The second type of interaction and environment (e.g. the influence of the sport preparation process) is where individuals with different genetic programmes may provoke different reactions in sport environment. In the third form of the genetic and situation-related interaction, individuals with different genetic structure choose individual or team sport. It is assumed that genetic factors influence the selection and creation of the environments^{21,40}. Thus the main issue in the field of sport science is no longer whether genetics affects the sport efficiency, but which genetic profiles result with top performance in a competition^{22,23}. It is important to stress that in a certain point in time it is impossible to determine to what extent an individual is the recipient of the environmental influences, and to what extent he is the 'creator' of these influences²¹. Contemporary research programmes in the field of sport science are trying to study an athlete's personality in a way to assess how neural mechanisms, neurotransmitters and hormones affect the physical constitution and personality traits.

Therefore, we consider that the future research directions should include the identification of the concrete genes connected with somatypes and the personality traits of athletes. This requires from psychologists and kinesiologists to direct towards the methods of molecular genetics⁴³. In accordance with this, and by examining the genetic material of different athletes, it may be discovered how the gene variations are connected to differences in the actual player's quality. Further on, new lines of researches should involve mechanisms responsible for specific adapting changes connected to the changes of the morphological characteristics and personality traits under the influence of the process of sport preparation.

Conclusion

The research was conducted to establish the influence of the somatotype components and personality traits on the playing position and the quality of top Croatian cadet female handball players. Motor functioning in handball suggests a corresponding morphological structure which means that the process of the quality development in female handball involves the integration of motor abilities into the morphological system⁴⁴. Thus, it is assumed that in handball game, somatotype features influence the performance quality and sport achievement.

Based on the influence of the somatotype features and personality traits on the playing position and the quality of top Croatian cadet female handball players, we may claim that this age is not suitable for bringing certain general conclusions, since players at this age are not under the influence of training and competitive stress to such an extent as in the senior or junior category.

Finally, we consider it not to be advisable, in practice or theory, to determine the position and the role in the

game of a (fe)male player by monitoring only morphological characteristics and personality traits. Further on, the selection of players should not be based only on the stated physical and psychological characteristics, but also on the relevant anthropological complexes⁴⁴ determining performance and sport achievement. Finally, integral sport preparation of (fe)male players 'opens' multiple possibilities for selective compensation and optimisation of the genetic potential development in athletes. The results of this research, in addition to the two previous researches^{44,47}, give more integral information on bio-motor structures and personality traits affecting the performance and sport achievement in female handball.

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UTJECAJ KOMPONENTI SOMATOTIPA I OSOBINA LIČNOSTI NA IGRAČKU POZICIJU I KVALITETU HRVATSKIH VRHUNSKIH KADETSKIH RUKOMETAIŠICA

S A Ź E T A K

Istraživanje je provedeno s ciljem utvrđivanja strukture i razlika morfoloških značajki i osobina ličnosti između različitih skupina rukometašica kadetskog uzrasta podijeljenih prema igračkoj kvaliteti i igračkim pozicijama. Nadalje, ispitivanje je provedeno na 70 rukometašica prosječne dobi 15,31 godinu koje su, prema poziciji u igri podijeljene na vratarke, vanjske igračice, krilne igračice i pivotmene. Također su, prema kvaliteti u igri, podijeljene na dvije kvalitativne skupine igračica i to one koje spadaju u širu reprezentativnu skupinu igračica, pa su okarakterizirane kao vrhunske rukometašice u RH, i one koje nikada nisu bile pozvane u kadetsku reprezentaciju, pa ih možemo tretirati da su manje kvalitetne, odnosno prosječne rukometašice. Struktura prediktorskih varijabli ukazala je na postojanje generalnog morfološkog faktora koji procjenjuje konstituciju rukometašica i dva faktora osobina ličnosti – neuroticizma i ekstraverzije. Analiza varijance nije ukazala na statistički značajne razlike varijabli somatotipa u odnosu na kvalitetu i poziciju u igri. Promatrajući temeljne crte ličnosti statistički značajna razlika utvrđena je samo u intraverziji-ekstraverziji i to manji skor kod vratara nego kod ostalih pozicija, što ukazuje na veću razinu introvertiranosti kod te igračke pozicije. Takav rezultat je očekivan jer upravo ta igračka pozicija obiluje specifičnim zadacima i zahtjevima u igri u odnosu na sve ostale igračke pozicije. Nadalje, zaključeno je kako se selekcija igrača ne smije temeljiti samo na navedenim tjelesnim i psihološkim obilježjima, već na relevantnim antropološkim sklopovima koji određuju izvedbu i sportsko postignuće.