

## Compatibility Features between Athletes-Players with Different Efficiency of Team Activities

### Особливості сумісності між спортсменами- ігровиками з різною результативністю командної діяльності

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#### ABSTRACT

*The aim of the article is to compare the parameters of compatibility (psychophysiological and socio-psychological) among athletes-players with different efficiency of team activities.*

*Methods.* Athletes representing various kinds of sports (football, basketball, etc.) took part in the research. Psychophysiological compatibility was studied using the cinematometric methodology of E.P. Ilyin, the method of diagnosing the temperament of Y. Streliau, and free conversation. The following methodologies were used for measurement of parameters of socio-psychological compatibility of athletes: «Sociometry» modified by I.P. Volkov; methodology «Attitude to

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*training and competitive activity» by Y.A. Kolomeitsev; methodology «Orientation of Personality» by V. Smekal and M. Kucher modified by Y.A. Kolomeitsev; methodology «Motives of sports activity» by E.A. Kalinin. The efficiency of sports activities was calculated by the coefficient efficiency of the player presented in the competition statistics.*

*According to the design, the research is a comparative analysis of compatibility parameters of sports team members who differ in their efficiency indicators.*

**Results of the research.** *With the help of comparative analysis it was found the statistically reliable differences in various samples of athletes, namely:*

*– among members of one team who possess identical indicators of inertia – mobility of nerve processes, also their subjective assessments of the game partner and high success rates coincided;*

*– athletes with a high sociometric status in the team turned out to be significantly more productive than teammates with a lower status;*

*– the general motivation for sports activities is quite expected to be significantly higher in the group of highly productive athletes; at the same time, less productive players are dominated by a focus on themselves; and there are no differences in the severity of focus on interactions in different groups.*

**Conclusions.** *The empirical data proves that the content of separate components of compatibility (psychophysiological and sociopsychological) differs significantly among players with different success of sports activities. A hypothesis about the indirect nature of the connection between compatibility in the «athlete-athlete» system and the performance of team activities was raised.*

**Key words:** *interpersonal relationships, compatibility, athletes-players, efficiency of sport team activities.*

## Introduction

The problem of forming a socio-psychological climate in the team is relevant for sports activities no less than for any other ones. A sports team is a group that gains the status of a team when it assumes the functions of representing an organization at one or another competition.

Since the emergence of the sports group, being a formal organization, it has clear and specific tasks, the implementation of which is focused on both the trainer and the entire team.

The efficiency of game sports directly depends on the level of relations between athletes, their teamwork, mutual assistance, mutual responsibility, mutual understanding. G.D. Babushkin, E.V. Kulagina (Babushkin & Kulagina, 2019), A.M. Groshev, V.V. Butorin (Groshev & Butorin, 2018), Y.A. Kolomeitsev (Kolomeytsev, 2004), R.L. Krichevskiy, E.M. Dubovskaia (Krichevskiy & Dubovskaia, 2001), K.S. Shalaginova, A.M. Davydova (Shalaginova & Davydova, 2019) state that high efficiency of team activity is possible only in conditions of positive interpersonal relationships.

From the G.M. Andreeva's point of view (Andreeva, 1981), the existence of interpersonal relations within various forms of social relations is the implementation of impersonal (social) relations in the activities of particular people, in acts of their communication and interaction. The researcher says that the emotional basis, allowing them to be considered as a factor in the psychological climate of the group, is the most important specific feature of interpersonal relationships. The emotional basis of interpersonal relationships means that they arise on the basis of certain feelings that are emerging between people. Y.P. Platonov (Platonov, 1990) shares this position by speaking about positive and negative emotional states, conflict (intrapersonal and interpersonal), emotional sensitivity, self-satisfaction, partners, work, etc.

A.V. Petrovskiy (Petrovskiy, 1982: 169) considers interpersonal relations as «subjectively experienced relationships between people, objectively manifested in the nature and methods of mutual influences exerted by people on each other in the process of joint activity and communication. Interpersonal relationships are a system of attitudes, orientations, expectations, stereotypes and other dispositions through which people perceive and evaluate each other. These dispositions are mediated by the content, goals, values, organization of joint activities, and serve as the basis for the formation of a psychological climate in the team».

Analysis of researches devoted to the study of the dynamics of interpersonal relationships, the effectiveness of joint activities and other socio-psychological phenomena allows us to talk about their conditionality by a certain ratio of the individual-psychological characteristics of interacting people. The positive effect of a combination of individual-psychological characteristics on observed phenomena is denoted as the compatibility of subjects of interaction (Andreeva, Bogomolova & Petrovskaya, 1984), etc. The phenomenon of compatibility consists in «a combination of psychophysiological, characteristic, personal, socio-psychological, motivational-incentive, professional and other individual features of group members that contribute to the formation and preservation of positive interpersonal relations, effective interaction, maintenance of good health and mood, efficiency and, in general, the effectiveness of joint activities during targeted group functioning» (Zamaletdinov & Bogdashevsky, 1984: 16), etc.) Thus, N.N. Obozov (Obozov, 2000), considering compatibility based on the results of activity and interaction, psychophysiological shifts and energy costs, subjective satisfaction with joint activities and without fixing attention to personal qualities or psychomotor reactions, proposes to assess interpersonal compatibility on the basis of similarity, which is characterized by stable mutual elections in sociometric testing, identical in the level of development personal qualities, the same assessment of the situation, people, events, similar decision making, high coordination of speed, pace, rhythm and time of interaction, and the principle of complementarity, as mutual compensation for individual personality properties, qualities, physical characteristics that ensure the integrity and effectiveness of interconnected actions.

The partial nature of compatibility, expressed in its manifestation not global, but only in connection with the implementation of specific types of group activities is considered in the works of R.L. Krichevskiy (Krichevsky, 2001). However,

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in the same situations, athletes may not effectively solve the tasks, they may be incompatible. In this regard, A.V. Rodionov (Rodionov, 1979) argues that it is important not to correspond or coincide fully with qualities, but to balance the capabilities of a partner and complementarity.

The development of the compatibility problem in psychological science is associated with attempts to classify it. A theoretical and methodological analysis of the problem of compatibility in psychological science made it possible to identify the difference in approaches to its study in domestic and foreign literature. Thus, the last is characterized by an interpretation of the problem being studied from the point of view of necessary and behavioral approaches (Shaw, 1976; Schutz, 1958, etc.). In the domestic literature, the study of compatibility is dominated by adaptive, functional and structural approaches (Obozov, 1979).

The content of the adaptive approach to the study of the problem determines the interpersonal relationships being developed between partners due to their compatibility. The approach focuses on the study of such components of compatibility as mutual understanding, empathy, identification, respect, attraction, positive emotions.

The definition of compatibility as a measure to harmonize the roles of interacting parties takes place in a functional approach. The center of study here is not the personality properties, but the structure of the distribution of roles in the group. Models are presented and interoperability research strategies are proposed.

The development of options for the most rational combinations of parameters and properties of participants in various interpersonal interactions is presented in the structural approach. The revealed compatibility patterns are reflected in the principles of similarity – contrast, symmetry – complementarity. Analysis of scientific works gives an idea of models

and types of compatibility that differ in the representation of structural content by different authors (Kolomeitsev, 1984; Krichevskiy, 2001; Obozov, 2000, etc.).

In order to be effective, sports team activity must be characterized by the coordination and synchronism of the actions of its members, which is largely due to their compatibility. In sports, compatibility is understood as «the effect of combining and interacting individuals». It is characterized by maximum subjective satisfaction of partners with each other at significant (above average) emotional-energy costs (Kolomeitsev, 2004: 41).

The study of the compatibility problem in sports activities is extremely relevant for sports of a team-game nature, where in the first place there is always We, and efficiency is determined by the quality of interaction. The compatibility is the most important condition for the formation of an effective team, and in general, team formation in sports. The team is considered as a target organizational group with a high level of cohesion by V.M. Davydov and I.D. Ladanov (Davydov & Ladanov, 1985), arguing that in the process of staffing the team, should be taken into account: mutual autonomy of needs; mutual complementarity of needs; mutual complementarity in knowledge; mutual addition in skills and experience; commonality of the value system and rules of conduct of team members.

In the studies of R.L. Krichevskiy and E.M. Dubovskaia (Krichevskiy & Dubovskaia, 2001), the connection of the problems of team formation in sports with the solution of the issue of the psychological compatibility of people is also noted. Scientists argue that it is especially important to take into account the functioning of two mechanisms of compatibility at the stage of recruiting a sports team: synergy (similarity) and compensation (complementarity). According to their point of view, the basis of command formation is formed by:

- 1) the study of the phenomenon of group cohesion;
- 2) highlighting the leading role of the manager in team formation;
- 3) establishing an effective positional and role structure;
- 4) consideration of psychological compatibility.

The problem of compatibility is especially relevant in the context of ensuring the optimal psychological climate in the sports team in order to increase the mental reliability of athletes – one of the most important indicators of the effectiveness of sports activities, and, as a result, the full realization of their professional potential.

Theoretical analysis of works on the problem of compatibility in the field of sports psychology suggests that there is no consensus among researchers regarding varieties of compatibility. In Russian-language literature we often encounter the isolation of social, psychological and psychophysiological types of compatibility.

Thus, social compatibility is characterized by the unity of views and judgments regarding economic, political and moral processes taking place in society, similar points of views on the behavior and actions of individual members of the collective, similar beliefs and moral principles.

Psychological compatibility is manifested in the psychological properties' harmony of the group members, as well as the functioning consistency of their mental processes.

Psychophysiological compatibility reflects the similarity of people in such parameters as age, the degree of physical, sensorimotor and psychomotor development (reaction rate), the level of training and preparedness (energy consumption), and the manifestation of individual psychological features.

Y.A. Kolomeitsev suggests talking about socio-psychological compatibility as an integral concept of the phenomenon of compatibility, which includes «the unity of views and opinions on the norms and requirements of society, the same needs, motives and values system, synchrony of psychomotor reac-

tions, level of arousal and inhibition, similarity in such personal qualities as extra-introversion, syntony, attention, speed of information processing, etc.» (Kolomeitsev, 2004: 120).

Socio-psychological compatibility in interpersonal relationships suggests:

1) complementarity of needs implying an addition expression of needs;

2) congruence of needs, when both subjects (partners) have similar needs, satisfied by the same interpersonal relationships;

3) complementarity of skills involving compensation of undeveloped abilities in one subject by another (partner);

4) complementarity of knowledge when both partners have different knowledge, so that each of them can learn from each other;

5) community of values, where partners in joint activities have a common value system and rules of conduct (Obozov, 1979).

If athletes coincide at all levels, we can talk about their complete socio-psychological compatibility. In cases of their apparent mismatch, a psychological barrier arises when people don't perceive each other, don't want to communicate, cooperate, which leads to the formation of an unfavorable psychological climate in the sports team.

In the works devoted to the study of compatibility, we find the use of a wide variety of its criteria or indicators: high group cohesion, stability over time, high mutual understanding between partners, low conflict in the group, high efficiency of group activity, i.e. any of socio-psychological phenomena taken in its positive meaning. N.N. Obozov (Obozov, 2000) proposes to evaluate compatibility directly based on: the results of activity and interaction, psychophysiological shifts and energy costs of participants in the activity, subjective satisfaction with joint activity.



## Research Objective

This article contains a description of the differences in compatibility parameters (psychophysiological and socio-psychological) among athletes of the same team, demonstrating different performance of sports activities.

## Research methods and methodology

The aim of our research is to study the expression of different compatibility types (psychophysiological and socio-psychological) between game athletes with different performance of team activities.

Previously, we worked to identify certain types of compatibility between athletes (at the «horizontal level»).

Thus, psychophysiological compatibility was established on the basis of the identity of characteristics such as inertia-mobility of nervous processes. The following methods were used to define it:

- cinematometric method by E.P. Ilyin (Ilyin, 1981);
- technique for diagnosing the temperament of Y. Streliau in the modification of B.A. Viatkin (Viatkin, 1978).

Further, a conversation was conducted with athletes for this purpose to identify:

- a) with which of the athletes they work with pleasure, who take a hint them;
- б) who is difficult to work with, who is unpleasant.

To diagnose socio-psychological compatibility, the following methods were used:

- methodology «Sociometry» by I.P. Volkov (Volkov, 1989);
- methodology «Attitude to training and competitive activity» (ATCA) by Y.A. Kolomeitsev (Kolomeitsev, 2004);
- methodology «Orientation of Personality» by V. Smeykl and M. Kucher in the modification of Y.A. Kolomeitsev (Kolomeitsev, 1984);
- methodology «Motives of sports activity» E.A. Kalinin (Kalinin, 1982).

The efficiency of athletes was estimated using the player's success factor presented in the competition statistics, reflecting: the volume of the player's technical and tactical actions implemented, the density of the technical and tactical actions, the quality of his performance of game actions.

The sample included 100 athletes of playing sports of a professional level ( $n = 100$ ): male players of the backup team of the Dynamo Brest club, volleyball players of the Western Bug men's team in Brest, volleyball players of the Pribuzhie women's team in Brest, basketball players of the Victoria women's team in Brest, etc. Participation in the study was voluntary.

### **Results and Discussion**

78 interviewed athletes, among 100 ones, named one or two athletes from their teams with whom they gladly work, who take a hint from them (we combined them into group A) and who is difficult to work with, who is unpleasant (group B).

Correlation analysis of the inertia-mobility characteristics of athletes showed that there are almost no differences in these indicators ( $t = 0.48$ ) between the respondent athlete and single-team athletes of group A, while there are reliable differences  $t = 2.15$  between the respondent athlete and single-team athletes of group B;  $p < 0.05$ ).

A comparative analysis of the athletes' performance of both groups showed reliable differences in their results. With the equality of athletes of these groups in age and athletic experience, group A of athletes had higher athletic results ( $t = 3.76$ ;  $p < 0.05$ ). Thus, sports teams whose members have similarities with each other in such an indicator of the psychophysiological characteristic as «inertia – mobility» are able to achieve greater success in sports than those teams to which this similarity is not inherent. At the same time, it is important to note that it is not psycho-physiological compatibility itself that provides an increase in results (discussions with athletes revealed they could hardly realize it). It is more

correctly to say that psychophysiological incompatibility is reflected in the emotional perception of the pace of movements, behavior, and then the whole personality. So the athletes-respondents were not satisfied with physical and technical data, but the pace of exercises, how they behave in communication and interaction in the classmates who compiled the group B. These external signs determined the athlete's attitude to other members of his sports team. For example, athletes with mobile nervous processes disapproved their inert one-team. Inert athletes did not like the behavior of a mobile one-team. The displeasure of the athlete, caused by the behavior of members of his team, cannot but affect the desire to work with them, on their relationship.

The object was the women's national basketball team «Victoria» in Brest in the study of the impact of socio-psychological compatibility on the relationship of athletes and the effectiveness of their activities. To this end, sociometric testing was carried out, which simultaneously gave information about the hierarchical structure of the team. The leaders stood out in the team, the average status of which according to the 2<sup>nd</sup> formal criteria – joint training and joint part in competitions – was + 7 and outsiders with an average status of 6.4 ( $t = 2.13$ ;  $p < 0.05$ ).

The analysis of the players' success performances in the series of competitions revealed the level of performance of each athlete. Based on this and the value of personal status, the team was divided into two subgroups: successfully players and unsuccessfully ones. The average score of success was 4.34 points (out of 5), unsuccessful – 3.4. The difference is statistically significant ( $t = 3.13$ ;  $p < 0.05$ ). A comparative analysis of the success of performances with the size of personal statuses makes it possible to establish the presence of a functional connection between these variables. Further studies have shown that interoperability elements and their interrelationships have imprinted impact of the activities.

The following compatibility elements: attitude to training and competition, motivation of sports activities, focus as mental quality, focus as a life goal, criteria of socio-psychological climate, etc. in quantitative terms differed significantly depending on which subgroup they belonged to. Thus, the attitude to training and competition in the subgroup of successful at a reliable level is higher than in the subgroup of unsuccessful ones. Motivation of sports activity, which structure included the need for achievement, wrestling, self-improvement was higher in the subgroup of successful ones.

Differences in focus as a mental quality among the representatives of these subgroups were mixed. The unsuccessful participants exceeded their counterparts at a reliable level in focus on themselves, were the same in focus on interaction with them and were inferior to successful in focus on the task ( $t = 1.7$  – trend towards reliability).

A comparison of subgroups in focus as a life goal showed the superiority of successful ones in focusing on achieving high sportsmanship ( $t = 3.9$ ;  $p < 0.05$ ). According to the criteria No. 18 (I do sports in order to visit abroad) and No. 25 (I do sports to be in a team, communicate), unsuccessful participants differ from successful ones at a reliable level ( $t_{18} = 3.12$ ;  $p < 0.05$ ) and ( $t_{25} = 2.74$ ;  $p < 0.05$ ). According to criteria No. 26, 34–35, successful ones exceed unsuccessful ones at a reliable level ( $t_{26} = 2.77$ ;  $t_{34} = 2,58$ ;  $t_{35} = 3.36$  at  $p < 0.05$ ) (Gavrilovich, 2017).

## Conclusions

Thus, as a result of the study, we have identified significant compatibility relationships with the efficiency of sports achievements. It is fair to say that compatibility is connected with the efficiency of team activities rather indirectly, through the factor «attitude to training and competitive activities». Like the psychophysiological, socio-psychological compatibility

acts as a really good basis for establishing expedient relationships in the «athlete – athlete» system, providing the prerequisites for a positive attitude of the athlete to training and competitive activities, helping him or her to set the mood for active, conscientious completion of the task and forming a favorable emotional background in the team, thereby positively affecting the growth of the results of the sports team.

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**Гаврилович Олександр. Особливості сумісності між спортсменами-ігровиками з різною результативністю командної діяльності**

**АНОТАЦІЯ**

**Мета статті** полягає в порівняльному аналізі параметрів сумісності (психофізіологічної та соціально-психологічної) спортсменів-ігровиків із різною результативністю командної діяльності.

**Методи.** У дослідженні брали участь спортсмени, які представляють різні ігрові види спорту (футбол, баскетбол тощо). Психофізіологічна сумісність вивчалася за допомогою кінематометричної методики Є.П. Ільїна, методики діагностики темпераменту Я. Стреляу, а також вільної бесіди. Для вимірювання параметрів соціально-психологічної сумісності спортсменів використано такі методики, як: «Соціометрія» в модифікації І.П. Волкова; методика «Ставлення до тренувальної та змагальної діяльності» (ОТСД) Ю.А. Коломейцева; методика «Спрямованість особистості» В. Смейкла і М. Кучера в модифікації Ю.А. Коломейцева; методика «Мотиви спортивної діяльності» Е.А. Калініна. Результативність спортивної діяльності розраховувалася за допомогою коефіцієнта успішності гравця, представленого у статистиці змагань.

За своїм змістом дослідження являє собою порівняльний аналіз параметрів сумісності учасників однієї спортивної команди, які відрізняються за показниками результативності їх діяльності.

**Результати дослідження.** Порівняльний аналіз виявив статистично достовірні відмінності в різних вибірках спортсменів, а саме:

– в учасників однієї команди, які володіють ідентичними показниками інертності – рухливості нервових процесів, збігалися також їх су-



б'єктивні оцінки партнерів по грі й високі показники успішності діяльності;

– спортсмени, які володіють високим соціометричним статусом у команді, виявилися істотно результативнішими за своїх партнерів по команді з нижчим статусом;

– загальна мотивація спортивної діяльності цілком очікувано вірогідно вища в групі високорезультативних спортсменів; при цьому в менш результативних ігровиків переважає спрямованість на себе, а відмінності у вираженості спрямованості на взаємодії в різних групах відсутні.

**Висновки.** Емпірично встановлено, що зміст окремих компонентів сумісності (психофізіологічної та соціально-психологічної) істотно відрізняється у спортсменів-ігровиків із різною успішністю спортивної діяльності. Висловлено гіпотезу про опосередкований характер зв'язку між сумісністю в системі «спортсмен – спортсмен» і результативністю командної діяльності.

**Ключові слова:** міжособистісні стосунки, сумісність, спортсмени-ігровики, результативність спортивної командної діяльності.

**Гаврилович Александр. Особенности совместимости между спортсменами-игровиками с разной результативностью командной деятельности**

## АННОТАЦИЯ

**Цель статьи** заключается в сравнительном анализе параметров совместимости (психофизиологической и социально-психологической) спортсменов-игровиков с разной результативностью командной деятельности.

**Методы.** В исследовании принимали участие спортсмены, представляющие различные игровые виды спорта (футбол, баскетбол и др.). Психофизиологическая совместимость изучалась с помощью кинематографической методики Е.П. Ильина, методики диагностики темперамента Я. Стреляя, а также свободной беседы. Для измерения параметров социально-психологической совместимости спортсменов использованы такие методики, как: «Социометрия» в модификации И.П. Волкова; методика «Отношение к тренировочной и соревновательной деятельности» (ОТСД) Ю.А. Коломейцева; методика «Направленность личности» В. Смейкла и М. Кучера в модификации Ю.А. Коломейцева; методика

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*«Мотивы спортивной деятельности» Е.А. Калинина. Результативность спортивной деятельности рассчитывалась посредством коэффициента успешности игрока, представленного в статистике соревнований.*

*По своему содержанию исследование представляет собой сравнительный анализ параметров совместимости участников одной спортивной команды, отличающихся показателями результативности их деятельности.*

**Результаты исследования.** Сравнительный анализ обнаружил статистически достоверные различия в разных выборках спортсменов, а именно:

– у участников одной команды, обладающих идентичными показателями инертности – подвижности нервных процессов, совпадали также их субъективные оценки партнеров по игре и высокие показатели успешности деятельности;

– спортсмены, обладающие высоким социометрическим статусом в команде, оказались существенно результативнее своих одноклубников с более низким статусом;

– общая мотивация спортивной деятельности вполне ожидаемо достоверно выше в группе высокорезультативных спортсменов; при этом у менее результативных игроков преобладает направленность на себя, а различия в выраженности направленности на взаимодействия в разных группах отсутствуют.

**Выводы.** Эмпирически установлено, что содержание отдельных компонентов совместимости (психофизиологической и социально-психологической) существенно отличается у спортсменов-игровиков с разной успешностью спортивной деятельности. Высказана гипотеза об опосредованном характере связи между совместимостью в системе «спортсмен – спортсмен» и результативностью командной деятельности.

**Ключевые слова:** межличностные отношения, совместимость, спортсмены-игровики, результативность спортивной командной деятельности.

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