

## Compatibility and the ability to work together in tourist sports teams

Kulagina Evgenia Viktorovna,  
Associate Professor, Candidate of  
Pedagogical Sciences, Head of the  
Department of Tourism, Hotel and  
Restaurant Business  
Design and Technology Institute  
Omsk State Technical University  
Omsk, Russia  
[kevgeniya@inbox.ru](mailto:kevgeniya@inbox.ru)

Esipova Svetlana Aleksandrovna,  
Candidate of Geographical  
Sciences, Associate Professor,  
Department of Management  
Yugra State University  
Khanty-Mansiysk, Russia  
[S\\_Esipova@ugrasu.ru](mailto:S_Esipova@ugrasu.ru)

Karasev Igor Evgenievich,  
Candidate of Philology, Associate  
Professor, Department of Tourism,  
Hotel and Restaurant Business  
Institute of Design and Technology  
Omsk State Technical University  
Omsk, Russia  
[igor200617@yandex.ru](mailto:igor200617@yandex.ru)

**Abstract.** *Compatibility is determined by researchers as a significant phenomenon of team activity that affect the effectiveness of the educational, training, and competitive process. However, the combination of the individual characteristics of athletes is not universal and is determined by the specifics of the sport, the conditions of the task, and the competitive result.*

*Practice shows that creating sports teams without taking into account the compatibility of athletes leads to increased emotional tension, negative relationships, conflict situations, change of partners or group breakup.*

*In sports tourism, the issue of the compatibility in tourist teams remains relevant.*

*To conduct empirical research, the individual psychological characteristics of 36 junior tourists were studied along with their compatibility.*

*The study allowed us to identify the personal characteristics of sports tourists and to determine their optimal combinations contributing to the effectiveness of team activities. The results of the study can be applied at the stage of creating tourist teams and other professional groups.*

**Key words -** *tourist teams, compatibility, responsiveness.*

### I. INTRODUCTION

Sports tourism is a popular sports activity that includes overcoming obstacles in the natural environment and on artificial terrain.

Training in sports tourism is a complex process, the main components of which are: general, special, physical, technical, tactical, psychological and integral preparation [1]. Competitions as an indicator of the effectiveness of the training process can be carried out both individually and in group form. Participation in tourist teams suggests that members of the same group go the distance at the same time, interacting with each other, using various techniques to ensure that they cope with the distance together.

Recently, more and more attention has been paid to the compatibility of athletes. Socio-psychological studies convincingly show that the underestimation of the psychological aspects of the teamwork results in the formation of an unfavorable climate, an increase in the number of conflict situations, a decrease in sports performance, an increase in the risk of injuries and, as a consequence, a possible group breakup.

Athlete compatibility is an important factor affecting the effectiveness of teamwork. The combination of the individual characteristics of athletes is not universal and is determined by the specifics of the sport, the conditions of the task, and the competitive result. For example, for table tennis athletes according to the extroversion-introversion index, the optimal combination is "extrovert-introvert", the less optimal are "introvert-introvert" or "extrovert-extrovert". For rowers, high rates are typical for the following traits in the 16-factor personality questionnaire (R. Cattell): "conforming – non-conforming", "calm – high-strung"; low and average rates for the scales "forceful-submissive", "self-sufficient – dependent". In effective basketball teams, athletes are more often characterized by high activity, emotional balance, a tendency to collective action, and an average level of motivation; less often it is possible to find athletes with low anxiety, inadequate sociability, high psychological tension, etc. [2, 3, 4].

In team sports, there are three levels of compatibility: social, psychological and psychophysiological [5]. Sports activity is characterized by situations where one of the compatibility levels becomes the leading one and determines the result of team work. The role of a certain level of compatibility is determined by the characteristics of sports activity, its requirements, tasks, and the rules of competitions.

To solve the problem of creating tourist sports teams, it is important to know the features of team activities. Sports tourism can be attributed to collective, simultaneous activities, which are characterized by the asynchronous work of athletes in terms of time and movements and by their consistency in making decisions regarding individual actions and techniques.

Among the indicators of compatibility, there is the so-called ability to work together - the process of team interaction in the context of a specific activity. The signs of the team's response are the accuracy and coordination of interactions in terms of spatio-temporal parameters, the optimal rhythm of work, the stability of tactical and technical actions under conditions of competitive stress. Compatibility, in contrast to the ability to work together, is expressed in the subjective satisfaction of the participants in the team work performed, while the ability to work together is manifested in success and profitability.

The study of compatibility and the ability to work together suggests a search and justification of the criteria for the selection and creation of tourist teams.

Knowledge in this area will contribute to sports and pedagogical practice in reducing the emotional and energy costs arising under conditions of training and regulating the socio-psychological climate in the team.

The purpose of the study is to identify combinations of individual characteristics of athletes from tourist teams that determine the effectiveness and their ability to collective interaction.

The hypothesis of this research is based on the assumption that the study of the individual characteristics of tourists and the analysis of their ability to work together will reveal criteria for their compatibility, which determine the effectiveness of team activity.

In accordance with the purpose and hypothesis of the study, the following research objectives are formulated:

1. To identify the individual psychological characteristics of tourists and their combinations in a collective interaction.
2. To establish criteria for the compatibility of individual psychological characteristics that determine the ability to work together in a tourist group.
3. To develop recommendations on the creation of tourist teams taking into account the psychological compatibility of athletes.

## II. MATERIALS AND METHODS

Possibilities for improving collective activity through the combinations of individual qualities of participants are shown in the works of foreign and Russian scientists [6-10]. The methodological basis of the study includes the theory and practice of teamwork management [11-13].

The study was conducted using the following methods:

- the perception of time intervals test [14];
- methods for diagnosing individual psychological and typological characteristics of a person (B.Vyatkin's method for the "Study of the properties of the nervous system" [14], the Spilberger-Khanin "Anxiety" test [15], the "Type of social behavior" questionnaire [16]);
- test for diagnosing the participants' ability to work together;
- pedagogical observation;
- methods of mathematical statistics (arithmetic mean of the sample ( $X$ ), sample deviation ( $\pm \sigma$ ), van der Waerden test, Pearson's correlation coefficient ( $r$ )).

At the first stage of the study, a background examination of the individual psychological and typological characteristics of athletes was conducted. 36 juniors participated in the study.

At the second stage, the teams of athletes were created with various combinations of identified individual characteristics. Then, the effectiveness of their collective work and the correct implementation of its elements were analyzed.

According to the results obtained, the groups were divided into well-performing and low-performing. The

criteria for assessing well-coordinated work at a distance were the time and the number of technical and tactical errors.

Diagnostics of the ability to work together was carried out using a homeostat. A homeostat is a device consisting of two cylinders of various diameters. A larger cylinder with tensioned ropes is installed at a height of 80 cm from the floor. Team members changing the position of the cylinder by pulling the ropes should put it on the cylinder fixed on the floor. The task is performed against the clock.

Based on the results of the collective activity, well-performing and low-performing groups of tourists were determined. Then, the optimal combinations of the individual psychological characteristics of the athletes were established, which determine their ability to work together.

## III. RESULTS AND DISCUSSION

A correlation analysis of the results obtained during the distance and performance of the task on the homeostat showed a significant relationship between the success of interaction in overcoming obstacles and the speed of the task on the homeostat ( $r = 0.78$ ).

The individual psychological characteristics of the athletes were determined, and their combinations in tourist teams were studied (Table 1).

Well-performing athletes are characterized by a moderate level of personal anxiety (78%). This suggests good stress resistance and the self-regulation ability. The group of low-performing tourist teams is characterized by the greater number of athletes with high anxiety compared to the group of well-performing teams ( $<0.05$ ).

According to the indicators of the nervous system among participants, people with an average strength, mobility and balance of the nervous processes are more common. Moreover, significant differences between groups are observed only in terms of "balance", the partners from well-performing groups are more balanced in terms of excitation and inhibition processes ( $<0.05$ ).

According to the indicators of "extroversion" and "introversion", no significant differences were found between well-performing and low-performing groups ( $> 0.05$ ).

When studying conflict situations, low indicators were found in both groups, but differences were observed on the scales of "compromise" and "adaptation" ( $<0.05$ ): higher values are typical for well-performing groups (Table 1).

Table 1  
Individual psychological features of team tourists (X ; ±σ)

	Parameter	Well-performing groups	Low-performing groups	P <sub>0</sub>
1.	Properties of the nervous system (scores):	41.0	32.19	>0.05
	- strength	± 10.45	± 16.97	
	- mobility	41.12 ± 12.42	34.52 ± 14.16	>.05
	- balance	44.37 ± 8.54	30.12 ± 8.82	<0.05
2.	Personal anxiety (scores):	31.4 ± 6.21	39.53 ± 11.16	<0.05
3.	Type of social behavior (scores):			
	- competition	23.61 ± 1.78	22.17 ± 1.37	>0.05
	- compromise	27.43 ± 1.84	21.10 ± 1.17	<0.05
	- collaboration	25.16 ± 1.12	22.13 ± 1.89	>0.05
	- conflict avoidance - adaptation	22.36 ± 1.51	22.87 ± 1.47	>0.05
4.	Expressiveness of functions (%):			
	-extroverts	35	62	<0.05
	-introvert	65	38	<0.05

When studying the individual characteristics of athletes from the same team, the following was revealed: in well-performing groups, a combination of properties of the nervous system that are similar in their expressiveness (for example, "strong-strong", "medium-medium", "mobile-mobile", etc.) is more common. In low-performing groups, other combinations of properties of the nervous system are more common such as "mobile-inert", "strong-weak", etc. (Table 2).

Table 2  
Combinations of the properties of nervous processes in tourist groups (%)

	Combinations of the properties	Well-performing groups	Low-performing groups	P <sub>0</sub>
1.	Strength:			
	- homogeneous combinations	82.0	21.4	<0.01
	- heterogeneous combinations	18.0	78.6	<0.01
2.	Mobility:			
	- homogeneous combinations	74.6	40.2	<0.05
	- heterogeneous combinations	25.4	59.8	<0.05
3.	Balance:			
	- homogeneous combinations	82.7	20.1	<0.01
	- heterogeneous combinations	17.3	79.9	<0.01

The properties of the nervous system are manifested in cognitive processes, actions, in human communication and determine his/her individual style of activity. It is more difficult for athletes with different styles of activity to achieve synchronism and coherence in actions.

When studying compositions of personal anxiety, among well-performing groups, homogeneous and heterogeneous combinations of moderate and low personal anxiety are observed; in low-performing groups, different combinations of high, moderate and low personal anxiety were revealed (Table 3). It is possible that the presence of a highly anxious athlete contributes little to the effectiveness of collective activities.

Table 3  
The nature of combinations of personal anxiety indicators in tourist groups (%)

	Combinations of personal anxiety indicators	Well-performing groups	Low-performing groups	P <sub>0</sub>
1.	Homogeneous combinations:			
	-high indicators	-	10	
	-moderate indicators	32	10	<0.05
	- low indicators	7	7	>0.05
2.	Heterogeneous combinations:			
	-moderate and low indicators	50	20	<0.01
	-high, moderate, and low indicators	11	53	<0.01

According to the "introversion-extroversion" data heterogeneous combinations are typical for well-performing groups. In low-performing groups, the prevalence of extrovert athletes is observed (Table 4).

Table 4  
Combinations of characteristics of extroversion and introversion in athletes in tourist groups (%)

	Combinations	Well-performing groups	Low-performing groups	P <sub>0</sub>
1.	- extrovert + extrovert(s)	-	30	
2.	-extrovert + introvert (s)	64	28	<0.05
3.	-extrovert (s) + introvert	24	24	>0.05
4.	- introvert + introvert(s)	12	18	>0.05

When considering role positions, well-performing groups are characterized by one leader (leader-subordinate(s) combination (60%)). In low-performing groups, a variety of role structures is observed: leader-

leader (58%), leader-subordinate (s) (27%), subordinate-subordinate(s) (15%).

The participants of well-performing groups were also distinguished by a more adequate sense of time: the difference in evaluating the time intervals, on average, for well-performing groups was 1.32 s, for low-performing groups - 2.06 s (<0.05).

#### IV. CONCLUSION

A study of interaction in tourist groups with different levels of the ability to work together revealed the following.

Tourist groups that demonstrate high performance in passing distances are characterized by a high coherence of actions when working at a homeostat. The effectiveness of work at the homeostat can serve as an indicator of the athletes' further ability to work together when preparing for the competition.

A set of personality traits characteristic of well-performing partners was revealed. These are: a tendency to adapt and compromise behavior in a conflict situation, a moderate level of personal anxiety, emotional stability, the average expressiveness of indicators of strength, mobility, and balance of nervous processes, a good sense of time.

When studying combinations of the individual psychological properties of tourists, it was revealed that for well-performing groups it is typical:

- expressed homogeneous combinations of the properties of the nervous system, while a combination of average indicators of strength, mobility and balance is considered as a typical one;
- various combinations of moderate and low levels of personal anxiety;
- identical sense of time;
- heterogeneous combinations in role structures - leader-subordinate(s);
- a combination of extrovert-introvert (s).

Before starting the creation of sports groups, it is recommended to diagnose the properties of the nervous system, the expressiveness of the functions of introversion and extraversion, personal anxiety, a tendency to a certain role behavior, and response in a conflict situation. First of all, when recruiting tourist teams, it is necessary to take into account the nature of innate individual characteristics of athletes, since they are almost impossible to correct. These characteristics include properties of the nervous system such as strength, mobility and balance.

It is desirable to include in the same group athletes with a similar perception of time (the difference in perception of 15 second intervals should not exceed 1.3 s if possible). The same perception of time contributes to the coherence of partners when passing the distance.

To predict the ability to work together, the performance indicators on the homeostat can be used. Athletes who quickly achieve coherence on the homeostat can later demonstrate good coherence during the distance.

It should be noted that this research confirmed the essential role of taking into account the compatibility of individual psychological characteristics of participants

when creating tourist groups. The empirical work carried out allowed identifying individual psychological characteristics of tourists and the nature of their combinations in tourist groups.

Compatibility is an important prerequisite for the effectiveness of the training and competitive process. It not only creates the conditions for favorable interpersonal relationships, but also affects the ability to work together within the same group.

#### REFERENCES

- [1] Rubis L. G. Sport tourism. Rubis-St. Petersburg: AI PI ER Media, 2018. 164.
- [2] Devyatkina E. Yu. Compatibility and coordination of actions of highly qualified basketball players Psychology and pedagogy in Siberia: scientific. practical. journal. SibGAFK, 2001. Pp. 70-76.
- [3] Devyatkina E. Yu. Identification of compatibility criteria in basketball. Psychological technologies in physical education and sport: materials of Inter-regional symposium on sports psychology. Omsk: SibGAFK, 2004. Pp.70-72.
- [4] Jassar D. S. Interrelations of components of tactical readiness and success of competitive activity of young basketball players. Uchenye zapiski universiteta imeni P.F. Lesgafta", 2012. vol. 1 (83). Pp. 172-175.
- [5] Sports psychology in the works of domestic experts / comp. and the General edition of I. p. Volkov. SPb.: Peter, 2002. 384 p.
- [6] Zubkova, E. A. The problem of psychological compatibility in sport.// Scientific foundations of modern progress. Collection of articles of the International scientific and practical conference, 2016. Pp. 220-222.
- [7] Sysyov Yu. V. Theoretical and methodological foundations of formation and cohesion of the team in the process of sports activity. Russian Academy of Natural Sciences. M., 1998. -p.185
- [8] Filippenko A. N. Organizational and psychological relations in the sports team. The problem of humanization of tradition, innovation and quality of education. Proceedings of the jubilee scientific-practical conference with international participation in 2 parts Part II. Moscow-Yoshkar-Ola MF MOSA, 2008. Pp. 48-56.
- [9] Gomes Rui and Paiva, Paulo. Leadership, coach-athlete compatibility and satisfaction in handball: perceptions of novice and experienced athletes. Psico-USF (Impr.) [online], 2010, vol.15, n. 2, pp.235-248.
- [10] Al Dababseh, M.F., Ay, K.M, Abu Al-taieb, M.H., Hammouri, W.Y., & Abu Areeda, F.S. The relationship between psychological compatibility and academic achievement in swimming. Journal of Human Sport and Exercise, 2017. Vol.12 (2). Pp. 396-404.
- [11] Babushkin G. D. Psychological compatibility and responsiveness in various sports activities. Theory and practice of physical culture, 2005. vol. 10. Pp. 28.
- [12] Timchenko V.S. Social and psychological aspects of image of dragon boat paddling team and their impact on sports performance. Human Sport Medicine, 2017. Vol. 17 (3). Pp. 102-106
- [13] Freeman G., Wohn D. Y. Understanding eSports Team Formation and Coordination. Computer supported cooperative work-the journal of collaborative computing and work practices, 2019. Vol. 27. Is. 3-6. Pp. 1019-1020.
- [14] Bochaver K.A., Savinkina A.O. (2018) On the Phenomenon of Group Cohesion in Sports: An Analysis of Methodological Approaches. Sociology of Power, 2018. Vol. 30 (2). Pp. 55-82.
- Brinzak S. S. Psychological compatibility as a component of a successful sports team. Methodology and technology of practical psychology in the higher school system: abstracts. Kiev.: NPU named after M. P Dragomanova, 2007. P. 43-44
- [15] Methods of psychodiagnostics in sports /edited by V. L. Marishchuk, etc. Moscow: Enlightenment, 1990. 256 p.
- [16] Khanin, Yu. L. Psychology of communication in sport. M.: FIS, 1980. 209 p.
- [17] Babushkin G. D. Psychodiagnostics of personality in physical culture and sports. Omsk: Publishing house SibGUFK, 2012. 328 p.