



ORIGINAL SCIENTIFIC ARTICLE

COMPARATIVE PERFORMANCE OF SOCCER TEAMS OF DIFFERENT AGE GROUPS

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Abstract

The study purpose is to establish differences in the joint activities of soccer teams of different age.

Materials and methods. Psychological methods for indicators of joint activity of sports teams were used. Statistical analysis was performed using non-parametric analysis of variance (Kruskal-Wallis H-test). The study involved 105 soccer players, including 37 boys aged 15-18, 45 juniors aged 19-21 and 23 adult athletes aged 22 and over.

Results. In the young soccer players, group interaction, intellectual communication, psychological compatibility, as well as indicators of real and reflective group subjectivity are higher than in the adult and junior teams. The levels of group organization, diligence and success in performing sports tasks are dominant in the adult teams. At the same time, the integrative characteristic of joint sports activities is group efficiency, which is presumably the most pronounced in adults, thus characterizing the processes within the mental organization of joint activities of soccer players. It is the result of their cooperation, a transformed form of external teamwork.

Conclusions. The organization of joint mental activity differs in different age groups. This affects the formation and development of intra-group position of the athletes, influencing their optimal involvement in the team in the performance of designed or creative functions.

Keywords: soccer players, efficiency, interaction, subjectivity, organization.

Introduction

The study of the joint activities of soccer teams in the context of professional performance remains relevant in the scientific and practical activities of sports pedagogy and psychology. The importance of studying this problem lies in the possibility of increasing the group efficiency of the sports team through the organization of their mental activity. The formation and development of the athlete's active and collaborative personality requires his optimum inclusion in the team for performing the designed or creative functions (Voronova, Petrovska, Kovalchuk, Smoliar, 2020). At the same time, the athlete's internal mental processes are transformed forms of external team action, the result of their cooperation.

The relevance of our research is due the requirements of psychological and pedagogical practice in assessing differences in the joint activities of groups, in particular

interaction, organization and subjectivity, to determine the group efficiency and to identify the factors of its regulation in soccer players of different age groups.

Joint activity is considered one of the most important scientific categories in social psychology, which is studied at the level of general methodology, specific socio-psychological theory, as well as in applied activities (Petrovska, Voronova, Hryn, et al., 2021).

The team, as is known, represents the highest level of development of the group, in which joint activity is built on the basis of individual peculiarities, achievement of a personal maxim and orientation for common success (Durdubas, & Koruc, 2022). Individual achievements depend on the effective interaction of team members while preserving their individuality. Team members are characterised by the compatibility of personal and professional goals, which provides the basis for high cohesion, which makes them feel responsible for the success of the overall performance (Jowett, Shanmugan, Caccoulis, 2012; Kurdybakha, 2019; Vysochina, 2021).

The problems of increasing the effectiveness of joint activities and optimizing the selection of individuals for

groups to perform certain tasks are one of the priorities of sports breeding today. An analysis of the literature on the study revealed the existence of different views and conceptual approaches to the development of cooperative activities among athletes. The phenomena of psychological compatibility (Kurdybakha, 2020), homogeneity and heterogeneity of team members, organizational leadership (Duguay, Loughead, Hoffmann, & Caron, 2022), motivation of group activity (Vozniuk, Dibert, & Bazhan, 2020), collaboration, communication and interaction in "athlete-athlete" systems were studied in depth by domestic and foreign scientists, "athlete-trainer" (Vojtenko, 2017; Demerouti et al., 2021), conflicts in the sports team, team cohesion (McLaren, & Spink, 2020; Tolkunova et al., 2021), psychological and socio-psychological climate of the sports team (Petrovska, Voronova, & Hryn, 2021), collective subjectivity of the joint sports activity (Heilmann et al., 2022; Durdubas, & Koruc, 2022), reliability of the group activity (Hryn, 2009; Yongtawee et al., 2022), individualizing the training of the sports team (Khurtenko et al., 2021; Fortes et al., 2022).

At the same time, despite the considerable scientific achievements in this field, the methodological aspects of diagnosis, development and control of the effectiveness of joint competitive (training) actions remain underdeveloped.

The study of the joint activities of soccer teams of different age groups involves, first of all, the identification of such components as a source, means or additional mechanism for influencing the formation process, Management and enhancement of individual parties of joint activity, group efficiency, interaction, organization and subjectivity, the systematization of which determines the scientific interest of our research and determines its purpose.

The aim of the study is to establish differences in the joint activities of soccer teams of different age groups.

The objectives of the work: to assess the effectiveness of joint activities of soccer teams in different age groups.

Material and methods

Study participants

A total of 105 soccer athletes participated in the study, including 37 boys aged 15-18, 45 boys aged 19-21 and 23 adults aged 22 and over from educational, sports and educational institutions: The Faculty of Physical Education and Sport of the Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia National Agrarian University, Vinnytsia Oblast Children and Youth Sports School of soccer "Nyva Vinnytsia". Informed consent was obtained from all participants and written consent was obtained from the parents of the boys for participation in the experiment.

Study organization

In order to achieve these goals, a number of methods were used: analysis and generalization of scientific and methodical literature; questionnaires; and psycho-diagnostic tests using methods. For the evaluation of the group efficacy of the sports team, we adapted the questionnaire "Group efficiency of the sports team" Feltz and Lirg (1998). For the measurement of the athletes' perception of the abilities of their team to organize and perform joint actions, necessary

to achieve a team result (Koloso, & Vojtenko, 2014; Lirg, Feltz, & Chase, 1994; Martinez, Roman, Guillen, & Feltz, 2011). The questionnaire contained 20 different questions concerning the imaginary competitive situation described in the instruction. Five indicators were evaluated: capacity, unity, sustainability, preparedness and effort. The questions contained options of answers, each of which is asked to score on a 10-point Likert's scale (1-10). Scale determined higher or lower scores from "not at all certain" to "absolutely certain". For the evaluation of the group organization of the sports team the test "Visually analogous scale of organization of the group" (Hryn, 2013) was used. The players noted on the form line how well-functioning, psychologically compatible and successfully carrying out the assigned tasks their team. The one on the far left will mean very low performance, the one on the far right will mean very high performance. The evaluation of each indicator was measured with a ruler (0 to 10 cm) and the resulting data were given points. As a study of group interaction in a sports team the methodology "Map-scheme of the psychological-pedagogical characteristics of the group" (Voronova, 2017). She is consisting of questionnaires, forms a five-point scale, built into the set of specific qualities (activity orientation, organization, intellectual communication, psychological climate) characterizing the integrative properties of the group. Since the quality of the group is presented in the diagram map in most cases in the opposite way, it is necessary to consider them simultaneously. To assess any quality, you have to read the positive grade on the left, and the negative one on the right, and then cross-reference the grade against the corresponding score. The quantification is based on a comparison of the total for all integrative properties of the development level of the team. In order to determine the level of development of the group subjectivity, the test questionnaire "Types of group subjectivity" was used, the basis of which is the concept of the collective subject A.L. Zhuravlev, developed by K.M. Gaidar (Hryn, 2013). The study evaluated the team using a number of characteristics. To do so, first select the pole of characteristic that the athlete believes correctly describes his team. Then assessed the weighting of that quality using the corresponding half of the response scale (right or left). One of three variants of the answer is selected: "the quality is absolutely expressed", "the quality is significantly expressed", "the quality is expressed". The answer is denoted by the sign "+", placing it in the answer graph located between the two poles of the characteristic.

Statistical analysis

The digital material has been processed using traditional methods of mathematical statistics. The arithmetic mean of X, the square mean of S (standard deviation) was determined for each indicator. A non-parametric dispersion analysis (Kruskal-Wallis ANOVA ranks by H-test) was also performed to determine the degree of variation between several groups. Factor and cluster analysis of testing rates. The data obtained are processed using STATISTICA.

Results

The study found differences in the quality of joint performance of soccer teams of different age groups (Tab. 1).

According to the evaluation of the results of the group interaction we have found reliable differences in the indicator “intellectual communicativeness” ($H = 7.15$; $p < 0.05$; $v = 3$). The highest data (44.11 ± 2.9) are found among young athletes, the lowest (41.96 ± 4.4) among junior athletes. This shows that young soccers, unlike other age groups, quickly and easily find a common language in the team, come to a common opinion, find a common judgment.

According to the results of the analysis of the dynamics of changes in the group organization of soccer teams of different age groups, reliable significance has been established on the basis of “performance” ($H = 15.96$; $p < 0.001$; $v = 3$), “psychological compatibility” ($H = 14.31$; $p < 0.005$; $v = 3$), “success in achieving the set sports goals” ($H = 11.45$; $p < 0.01$; $v = 3$).

The performance of the indicator “performance” was the highest among soccer players of the adult group (72.48 ± 21.1). This demonstrates the quality of interaction of athletes, their joint productivity, their emotional and energy costs, their satisfaction with themselves, their partners and the content of their work, because the ability to interact with team members leads to the greatest possible group result.

According to the indicator “psychological compatibility” high value is fixed in youth soccer teams (72.24 ± 11.9), which indicates formation of interpersonal interaction and cooperation of partners, combination of personal characteristics, which have a positive influence on the results of joint sports activities.

A statistical difference in the indicator of “success in achieving the set sport tasks” was found high value recorded in adult soccer teams (74.35 ± 19.8). This is reflected in the increased satisfaction of the partners with joint actions, achievement of common tasks, as well as positive emotional release after successfully overcoming difficulties during competitions.

The analysis of the dynamics of the indicators of group subjectivity found a statistically reliable difference in the indicators of the “real subjectivity” ($H = 7.03$; $p < 0.05$; $v = 3$) and the “reflective subjectivity” ($H = 11.14$; $p < 0.01$; $v = 3$).

High values (48.59 ± 5.8) of “real subjectivity” have been recorded in teams of young men, which may indicate the manifestation of general activity of athletes realized in various types and forms of communication and interaction, as well as group relations. Adult soccer teams also recorded

Table 1. Comparative performance of joint soccer teams different age groups

Indicator		Age groups of athletes			H	p
		Boys	Juniors	Adults		
		15-18 years n = 37	19-21 years n = 45	22 years and over n = 23		
		X ± S	X ± S	X ± S		
Group interaction	Activity orientation	43.19 ± 3.8	42.33 ± 5.3	45.13 ± 5.7	3.54	0.17
	Organization	42.27 ± 4.7	43.47 ± 4.6	43.26 ± 4.7	1.55	0.46
	Intellectual communication	44.11 ± 2.9	41.96 ± 4.4	43.83 ± 4.2	7.15	0.05*
	Psychological climate	41.97 ± 3.7	41.98 ± 3.1	42.35 ± 4.8	1.96	0.375
	The average	42.89 ± 2.7	42.43 ± 3.5	43.64 ± 4.1	0.64	0.72
	Assessment of development	170.16 ± 14.1	169.31 ± 14.5	174.57 ± 16.3	3.37	0.185
Group organization	Teamwork	68.03 ± 13.5	63.11 ± 8.9	72.48 ± 21.1	15.96	0.001*
	Psychological compatibility	72.24 ± 11.9	61.04 ± 15.6	72.04 ± 20.2	14.31	0.005*
	Success in meeting sporting objectives	71.92 ± 10.3	64.93 ± 12.4	74.35 ± 19.8	11.45	0.01*
	The average	70.73 ± 9.3	63.03 ± 10.9	72.96 ± 18.9	3.86	0.145
Group subjectivity	Potential subjectivity	48.95 ± 9.2	46.60 ± 4.04	46.87 ± 3.2	2.58	0.275
	Real subjectivity	48.59 ± 5.8	45.71 ± 5.7	48.43 ± 8.8	7.03	0.05*
	Reflexive subjectivity	48.95 ± 9.3	46.00 ± 4.8	43.13 ± 4.2	11.14	0.01*
	The average	48.83 ± 4.9	46.10 ± 4.1	46.14 ± 3.7	3.46	0.177
Group efficiency	Ability	32.68 ± 4.0	28.36 ± 6.3	33.57 ± 4.8	17.81	0.001*
	Unity	30.46 ± 3.8	26.73 ± 6.4	32.87 ± 6.5	16.96	0.001*
	Sustainability	31.89 ± 31.22	28.71 ± 5.3	33.74 ± 5.4	14.91	0.005*
	Preparedness	31.22 ± 4.4	28.69 ± 5.3	34.39 ± 5.2	16.67	0.001*
	Efforts	32.19 ± 3.4	28.20 ± 5.0	33.91 ± 5.5	20.61	0.001*
	The average	31.69 ± 3.0	28.14 ± 4.9	33.70 ± 5.3	0.52	0.771

Notes: * – Indicators that differ reliably from the H-criterion ($n = 105$, $v=3$, $H_{cr(p \leq 0.05)} = 7.81$; $H_{cr(p \leq 0.01)} = 11.34$; $H_{cr(p \leq 0.005)} = 12.84$; $H_{cr(p \leq 0.001)} = 16.27$)

high numbers (48.43 ± 8.8). This may indicate a coherent formulation of common goals, mutual communication, joint decision-making and implementation, and adherence to group norms and values. According to the indicator of "reflective subjectivity" high value was recorded in soccer teams of youth age (48.95 ± 9.3). This characterizes their group self-reflection. The team realizes its psychological unity, the feeling of "We", the ability to carry out self-assessment of its own potentials, to relate them to group claims, to conduct self-analysis of its strengths and weaknesses. Players are able to formulate agreed opinions and judgements, have a common understanding of their own qualities and characteristics, discuss team goals and objectives together, and analyze group successes and failures.

An analysis of differences in the performance of group soccer teams of different age groups statistically reliable significance was established in the values "capacity" ($H = 17.81$; $p < 0.001$; $v = 3$), "unity" ($H = 16.96$; $p < 0.001$; $v = 3$), "stability" ($H = 14.91$; $p < 0.005$; $v = 3$), "preparedness" ($H = 16.67$; $p < 0.001$; $v = 3$), "effort" ($H = 20.61$; $p < 0.001$; $v = 3$).

High values have been recorded for adult soccer teams in all indicators: "ability" (33.57 ± 4.8), indicates their individual psychological characteristics, expressing readiness to master certain types of activities and to successfully implement them, this peculiarity depends not only on the quality of training, but also on the level of intellectual activity. Indicator "unity" (32.87 ± 6.5) indicates the community of thoughts, a stimulating process of group decision-making and a positive motivational factor both for the effective sporting activity of each athlete and for the team as a whole. "Stability" (33.74 ± 5.4) indicates efficiency in achieving results of training and competitive activity, where the effect depends on the stability of each team member. Indicator "preparedness" (34.39 ± 5.2) evaluation of the psychological attitudes of athletes to specific competitions. "Effort" (33.91 ± 5.5) evaluation of readiness to show better possibilities. Indicator "average value" (33.70 ± 5.3) generalized characteristic of the group of effectiveness of the athlete.

The results of the group effectiveness evaluation are an integral characteristic of the joint activity of soccer teams of different age groups. They express the shared belief of players in their ability to organize and execute the joint actions necessary to achieve a certain result.

Discussion

In modern scientific and methodical literature, a wide variety of material is widely presented, devoted to the regulation of the cooperative activities of teams and the integration of sports teams in order to achieve a better sporting result (Meyer, & Fletcher, 2007; Martinez, Roman, Guillen, & Feltz, 2011; McCarthy, 2011). At the same time, the specific conditions of joint sports activities, in particular the means of team development, the reduction of factors limiting them, the identification of indicators of psychological and pedagogical dynamics, and the assessment of the current status of the team, leading dominant intra-command processes, preparedness for joint action, etc. is rarely included in the group of reference factors for training and preparatory activities.

Most studies of joint activities tend to focus on results, for example, by showing a high level of group efficiency, bet-

ter results can be achieved (Lirgg et al., 1994; Pineau et al., 2019; Kostiukevych et al., 2021), but studies of its mechanisms, the sources of regulation in the literature are much smaller.

In our study, we traced changes in the characteristics of joint group activity in terms of age. Given the results, the knowledge and understanding of group efficiency regulators can have important practical implications for sports educators and coaches who seek to develop their athletes to become a successful team. Activities in a constantly changing environment require the ability to deal with new and unconventional situations and raise the requirements for communication and cooperation among people in the process of solving joint tasks (Brown et al., 2018; Van Slingerland et al., 2020; Kinoshita et al., 2022). The ability to act in a team is one of the most important qualities of the athlete, along with other sporting skills, while the team becomes the leading form of organizing joint sporting activities (Heilmann et al., 2022). A careful study of the differences in the quality of the performance of soccer teams showed that soccer players' perception of organizing joint mental activity differs in different age groups, which affects the formation and development of the intra-group position of the individual, influencing their optimal inclusion in the actions of the team in performing the designed or creative functions (Beavan et al., 2022).

The results of our experiment are being studied for the first time and are well consistent with other group performance studies in sport (Jowett et al., 2012; Kolosov et al., 2014; Josefsson et al., 2020). Our data is a continuation of the scientific problem of previous studies which have shown that group efficiency is closely related to the interpersonal relations of the coach and the athlete where group efficiency is a key variable of the group, as well as the coach's motivational climate, coach's leadership, team cohesion (especially the cohesiveness of athletes' tasks) which are predicted by direct commitment, and others (Vojtenko, 2017; McLaren et al., 2020; Pineau et al., 2019).

The data suggest a positive outcome in combining the effects of joint activities more pronounced in different age groups. On that basis, in providing guidance on how to maintain the most effective configuration of joint activities soccer teams.

Conclusions

The organization of joint mental activity differs in different age groups. It has an impact on the formation and development of the personality of the athletes within the group, influencing their optimal inclusion in the actions of the team in performing the designed or creative functions. Young soccer players have greater group interaction, intellectual communication, psychological compatibility, and real and reflective group subjectivity than adult and junior teams. In adult teams, the dominant levels are levels of group organization, teamwork, and success in performing assigned sports tasks. However, the integral characteristic of joint sports activity - group efficiency is predictably most expressed in adults, thus characterizing the processes within the mental organization of joint activities of soccer players, through the result of their cooperation, Transformed forms of external command interaction.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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ПОРІВНЯЛЬНА ХАРАКТЕРИСТИКА СПІЛЬНОЇ ДІЯЛЬНОСТІ ФУТБОЛЬНИХ КОМАНД РІЗНИХ ВІКОВИХ ГРУП

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів
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Мета дослідження – встановити відмінності спільної діяльності футбольних команд різних вікових груп.

Матеріали і методи. Використовувалися психологічні методики показників спільної діяльності спортивних команд. Статистичний аналіз проводився з використанням непараметричного дисперсійного аналізу (Н-критерію) Крускала-Волліса. У дослідженні брали участь 105 футболістів, з них 37 юнаків 15-18 років, 45 юніорів 19-21 року та 23 дорослі спортсмени 22 років і старші.

Результати. У футболістів юнаків групова взаємодія, інтелектуальна комунікативність, психологічна сумісність, а також показники реальної та рефлексуючої групової суб'єктності вищі, ніж у командах дорослих та юніорів. У дорослих командах домінуючими є рівні групової організованості, спрацьованості та успішності у виконанні поставлених спортивних завдань. Разом з тим, інтегративна характеристика спільної спортивної діяльності – групова ефективність, що передбачувано найбільш виражена у

дорослих, характеризуючи таким чином процеси всередині психічної організації спільної діяльності футболістів. Вона є результатом їхньої співпраці, перетвореною формою зовнішньої командної взаємодії.

Висновки. Організація спільної психічної активності відрізняється у різних вікових групах. Це відбивається

на формуванні та розвитку внутрішньогрупової позиції особи спортсменів, впливаючи на їх оптимальну включеність у дії команди у виконанні спроектованих або творчих функцій.

Ключові слова: футболісти, ефективність, взаємодія, суб'єктність, організованість.

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