

Psychotechnology of volleyball team efficiency formation

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Abstract:

The *purpose* of the article was to present the results of the study of the impact of social and psychological training on the formation of volleyball team efficiency. The objectives of the research were to investigate student volleyball teams' efficiency; identify social and psychological factors that determine team efficiency; to analyze peculiarities of influence of the social and psychological training developed by the authors on the formation of team athletes' efficiency; to investigate the changes in social and psychological processes that are related to the effectiveness of the team sporting activities. Theoretical analysis of the problem of efficiency of the team sports activities allowed to identify the main determinants, components and ways of this social and psychological phenomenon development. The specifics of sporting activities and relationships in sports teams impose possibility of solving this problem. It was determined that sports team had all the characteristics of a small group. The same social and psychological processes took place as in other small groups, so the ability to manage these processes is common to small groups, but the specifics of interaction in a sports team impose certain limitations on the possibility of psychological influence. Also, the role of a coach in team activities, the situation of wins and defeats in each particular case, the composition of the team, gender and age of athletes should be taken into account. *Material and methods. Participants.* The study involved players of student volleyball teams of high educational institutions in Kharkov, Slovyansk, Donetsk region, Chernihiv, Ukraine (n = 132, aged 17-23). *The main results* of the study were a significant increase in team effectiveness of volleyball teams, namely, increase of victories in competitions; improvement of social and psychological climate of the team, reduction of aggressiveness and conflicts; increase of dependence on group norms, values, assessments; increase in desire to communicate, new interpersonal relationships, fight for the status of a team; reducing the level of social frustration; growth of adequate variability of behavior and expression of feelings in the process of interaction; development of empathic abilities, interest towards people, ability to empathize, empathy. *Conclusions.* Thus, use of psychological technologies, in particular, social and psychological training, is an effective means of forming and developing team efficiency in sporting activities.

Keywords: team efficiency, social and psychological training, psychological climate

Introduction

At the present stage of sports development, there is an intense increase of athletic skill, which is primarily due to constantly increasing competition of players at the world level (Bogush, 2015). In addition, due to current trends in the development of team sports games, taking into account the factors of globalization in sport of higher achievements, there is a need to develop a unified psychotechnology for formation of team efficiency in sports games. After all, success of a sports team during the competition depends not only on the level of technical and tactical training of athletes and players, but also on how productively players interact with each other, their compatible team activity.

Modern volleyball is characterized by a conflict, variational nature of competitive activity, which proceeds in the conditions of an acute time and space limit and imposes certain requirements both on individual skills of players and on their group interaction (Glazyrin, 2013). The psychological incompatibility of players is proved by team uncertainty; making decisions by players that deny each other; misunderstandings between players; negative psychological climate in a team (Kleschev, 2002). This always affects effectiveness of a team, especially in the process of competition, when the situation is non-standard and stressful. In studies on

psychology of modern sports (Cretti, 2000), the problems of psychological climate of the sports team (Lozhkin, Vorobyov, Brynzak, 2007), psychological aspects of cohesion of the sports teams (Teslitsky, 2009) it was revealed that one of the defining aspects of effective sports activity is the degree of group compatibility of athletes. Physiological (functional) and social and psychological compatibilities can be distinguished (Kostukevich, 2014).

Physiological or functional compatibility is determined by the level of sports and technical training of the team, and the social and psychological one by needs, interests and personal qualities of athletes. If interoperability affects only the process of training or competition, the social and psychological one influences all relationships between athletes, including training and competitive activities, and eventually, the team's performance. The psychological compatibility of athletes also determines the psychological climate of the team (Kenanie, 2003). The nature of the relationship has a significant impact on the performance of individual athletes and the entire team, but this impact should be examined from the standpoint of competition and cooperation in sport. In some sports (fencing, wrestling, boxing) there is no direct cooperation between team members, in others (football, hockey, volleyball) this factor is expressed as much as possible. The factor of competition can be expressed both in these and those kinds of sports in connection with struggle for a place in a main warehouse, for the right to take part in competitions. The influence of interpersonal relationships on the effectiveness of the team should be considered in the light of these phenomena. Any psychotechnology is determined by two levels — theoretical and practical. At the theoretical level, psychotechnology includes a variety of apprehensions, concepts, models of the essence, structure, factors of individual's psyche development, social group; the driving forces of their development, goals, tasks and methods, stages of psychological regulation. In practice they are represented by a system of skills and management skills, regulation of the psyche. So, psychotechnology is a system of principles and models that describes the psychic reality, human essence or social group as a developing integrity. This system is focused on practical work with individual psyche or group psychology and includes specific methods, techniques, skills and abilities for the purposeful transformation of personality and group (Malkin, Rogaleva, 2013). Professional use of psychotechnologies in the process of training, sports training, can dramatically increase speed and efficiency of the training process, dramatically improve the performance of sports activities (Darvish, 2015). Thus, psychotechnology is quite promising for use in future sports practice. Unfortunately, today, insufficient attention is paid to such psychological developments that could be used in the training athletes and sports teams, and if they are suggested, this is psychotechnology to address individual problems of athletes. Specific unified psychotechnology for team-efficiency formation is not proposed. All these facts determined the problem of our study.

Material and methods

Participants. The study involved players of student volleyball teams of high educational institutions in Kharkiv, Slovyansk, Donetsk region, Chernihiv, Ukraine (n = 132, aged 17-23).

Procedure. The purpose of the study is to determine the actual level of effectiveness of the team of volleyball team and the possibilities for its optimization and improvement by psychological means. "Express-methodology for studying social and psychological climate of the group" by O. S. Mikhailuk and A. Yu. Shalyto; "Personal aggressiveness and conflict" by V. P. Ilyin and P. A. Kovalev; "Q-sorting" of behavioral trends in the group "by V. Stefansson; "Method of diagnosing the level of social frustration" by L.I. Vaserman in modification by V.V. Boyko; "Method of diagnostics of the level of empathic abilities" by V.V. Boyko; "Questionnaire for interpersonal relations" by V. Shutts were used as psychodiagnostic techniques. Effectiveness of the volleyball team was determined by the number of wins in the tournament games that took place during 2016-2018 academic years.

Data collection and analysis. At the first stage of the work, an assessment of students' volleyball teams effectiveness was made. According to the results the studied teams were divided into two groups. The first group included teams with high efficiency, that is, teams that win in 7 games out of 10 (70% of wins) (6 teams, n = 72), to the 2nd group with low efficiency (the ratio of wins to the games is 3:10 (30% of wins)) (5 teams, n = 60). The next stage of the study was to carry out psychodiagnostic procedures in both groups using mathematical statistics (Fisher's ϕ -criterion and Student's t-criterion).

The generalization of theoretical and practical approaches to increasing the effectiveness of the sports team, analysis of peculiarities of the volleyball players' sporting activities, organizational features, and psychotechnologies are the basis for the development of psychotechnology for the formation of volleyball team efficiency, which is a coherent, well-organized system of psychological principles, forms, methods, means, techniques, for achieving the goals of interaction. In this case, such psychotechnology is the author's social and psychological training, which was developed using the results of psychodiagnostic study of volleyball teams. The purpose of the training is to transform a group of people united for a common cause into a single "organism" that works clearly, coherently, with pleasure and efficiently. The participants of the training get teamwork skills, experience in achieving the goal in the team, reveal the features and mistakes of their team behavior,

overestimate their own behavior in the team, find reserves for more effective work taking into account the abilities and potential of each member.

Training is a part of group of specialist training courses (Issurin, 2008). The main tasks of training are the following:

1. Detection of the problem "targets". All teams have problems, among which the most common are those that are related to the human factor and the structure of the organization. Therefore, while assessing people outside the working situation (at training), it is easy to determine which personality traits are stronger, how it affects the interaction and effectiveness of team work.
2. Development of communication system among team members. The training is structured in such a way that it becomes clear: if team members do not communicate constructively, interact with each other, they will fail, therefore, it is necessary to develop communicative competence.
3. Development of individual and group reflection. Reflection is a method of realizing that a person has survived and learned something new, which makes it possible to learn from his experience and transfer knowledge to new fields of life. In the course of the training, after each exercise, the leader invites participants to discuss what happened: what was possible to do well, what was worse, what would have been done differently. Gradually, team members learn to synthesize their skills in a single group of knowledge of problem solving and overcoming difficulties.
4. Creating a positive social environment. This is the environment in which each participant understands each other, is able to interact with others to be a productive team.

Training, as a relatively short-term intervention, can only partially affect the team's parameters — that is, it cannot affect the conditions of its functioning, which are in the sphere of the social system rules, this group is included into. Accordingly, the first task in constructing a training model is to decide on what the training can affect, and what it cannot. In our view, social orientation of group activities (goals and objectives of the team) and its organization (subordination and coordination) belong to the sphere of objective, non-psychological factors of the group's life. Training can affect these parameters only indirectly: for example, while discussing teamwork problems, it may turn out that participants have a different idea of the purpose that the team is currently in, or that the organizational structure of the team is not effective (that does not correspond to the current tasks). In future, this issue can be solved at the structural, organizational, procedural level.

Training is structured around two main parameters of team work: this is a parameter "preparedness" (work)—degree of "trained" interaction as a result of experience, available knowledge of each other's qualities, the abilities of people - that in psychological literature is called teamwork skills: effective communication; solution of problems and decision-making, achievement of consensus (consensus); feedback (constructive criticism); work at team meetings (that is, the very "technique" of organizing discussions, holding meetings).

Parameter "psychological unity" as an intellectual, emotional and volitional unity of team members. A similar idea exists in the formulation of "creating a positive social environment." It seems advisable for us to combine the task of creating psychological unity and a positive social environment in the concept of "social and psychological climate", which is the state of the organization psychology as a single entity integrating separate group states. It is a stable, emotionally colored relationship between the members of the team, their interest in work and colleagues that is what team members feel about the functioning of the team, including degree of their comfort, agreement with the rules and behavior of the team as a whole.

Social and psychological climate affects the degree of openness, trust in the team; degree of activity of the participants, their contribution to the achievement of goals, respect for values, responsibility for team achievement. It promotes not only the maximum realization of the individual's potential in terms of competitions, the disclosure of his abilities, talent, but also carries psychoprophylaxis functions, protecting the psyche of athletes from excessive emotional overload in the process of preparing for sports bets. In this role, the social and psychological climate acts as a means of psychological sustainability of both an athlete, and the team as a whole. Thus, social and psychological training is the psychotechnology of the purposeful formation of people's effective interaction in the team through the development of skills of group work, creating a positive social environment that allows team members to realize their potential in accordance with the existing strategic goals of the team as a whole.

The author's program of social and psychological training for volleyball players is aimed at solving the following tasks:

- to understand the benefits of teamwork;
- to improve communication in a team;
- to master the skills of reflection and feedback;
- to improve decision-making processes in a team;
- to form the ability to accept restrictions and use the strengths of each participant.

The author's program includes working out four main problems: "General principles of team work"; "Effective communication in the team. Reflection. Feedback"; "Roles in a team" and "Solving problems and making decisions in a team". The logic of the discovery of each topic remains unchanged, while specific

exercises can vary depending on the composition of the group or the specific objective circumstances of its functioning.

Such psychotechniques as "Brainstorming", group discussions, case studies, role-playing games, behavior simulation are used in the training program. The leader applies an eclectic approach that combines techniques of social psychodrama, gestalt approach, individual psychology, narrative practices. Participants are provided with methodical materials. The training creates conditions for awareness of the general objectives of the activity and personal responsibility for the result of work. Duration of training is 40 hours, preferably 5 days in a row for 8 hours.

Algorithm of the program of social and psychological training for the formation of athletes' team efficiency

Purpose	Contents and procedures
1. Creating an atmosphere of cooperation.	The leader informs the group about the purpose, tasks and training regulations. The main rules of group work are discussed and adopted: the rule of activity, the rule of time control, the rule of organized communication, the rule of sensitivity to himself and others, the rule of closeness of information and discipline. The expectations of group members are explained.
2. Formation of positive social mood.	The training topics related to clarifying the general principles of team work and effective communication in the team are worked out.
3. Formation of effective team interaction.	General-group psychodramatic game (with video registration) demonstrates the features of team interaction, the plot of which should not be related to sports activities. Simulation of situations with interaction for individual subgroups of participants is provided. Exercising of Conflict relations are exercised. Reflection, the purpose of which is to transfer playoff results into real team relationships.
4. Development of relationships of mutual trust in the team.	Use of role-playing games created on the real working material, which promotes the development of active listening, feedback, reflection, and assertiveness.
5. Development of team cohesion.	Use of psychological tools for understanding cognitive and emotional components in attitude to the sports organization, in general, and the team, in particular.
6. Optimizing team roles.	Use of procedures aimed at awareness of team roles, skills development to become another, optimization of interdependencies and support, problem solving and team decision making (recommended video).
7. Fixing the results of training.	Awareness of the decision-making algorithm in the team. It emphasizes the value of each participant for the team and at the same time gives opportunity to feel interdependence of team members.

Results

The social and psychological training aimed at improving team efficiency was conducted by us in February 2018 with teams of volleyball players with the least number of wins in sports games (30%) during 2016-2018 academic years, and the psychological climate that does not promote positive team interaction. In six months' time after training we analyzed how the number of wins and losses had changed after the training (Figure 1), and carried out a repeated psychological diagnosis of the selected parameters of the psychological climate using the same psychodiagnostic techniques like before the training.

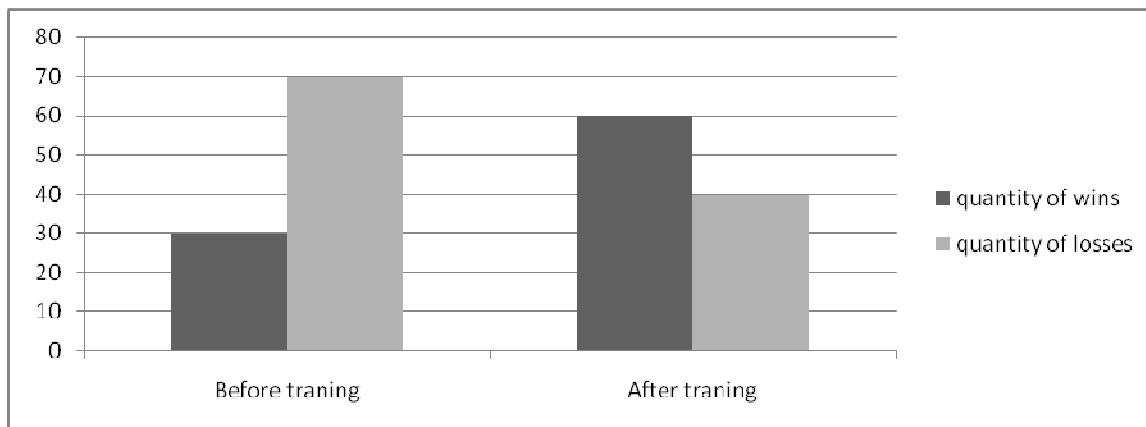
First we measured social and psychological climate. Obtained results are presented in Table 1.

Table 1. Indicators of the social and psychological climate before and after the training (points) (n = 60)

Components of the SPC	Before training (M ± σ)	After training (M ± σ)	t	p
Emotional	0,17 ± 0,06	0,46 ± 0,15	2,1	0,05
Behavioral	- 0,11 ± 0,04	0,58 ± 0,19	2,3	0,05
Cognitive	- 0,41 ± 0,14	0,75 ± 0,25	3,9	0,01

Significant differences for all indicators of the socio-psychological climate before and after the training (differences are significant at $p \leq 0.05$, $p \leq 0.01$ levels according to Student's t-criterion) were obtained.

Fig. 1. Indices of wins and losses in the sports teams of the studied group 2 before and after training.



Then we conducted a study of personal aggressiveness and conflict (Table 2).

Table 2. Indicators of aggressiveness and conflict studied before and after training (%) (n = 60)

Aggression and Conflict Scales	Before Training	After training	φ	p
Inflammation	75,4	51,3	1,64	0,05
Presence	65,4	55,1	1,09	-
Exposure	59,3	45,2	1,25	-
Impatience	77,5	52,8	1,64	0,05
Uncompromising	31,7	57,5	1,64	0,05
Volatility	43,5	49,1	0,78	-
Intolerance to the opinion of others	69,4	45,6	1,64	0,05
Suspicion	61,5	39,8	1,64	0,05
Positive aggressiveness	71,5	53,9	1,57	-
Negative aggressiveness	56,5	47,4	1,07	-
Conflict	62,9	48,5	1,28	-

The presented results indicate that some indicators of personal aggressiveness and conflict after training have changed considerably. Significantly, the following indicators have decreased: inflexibility ($p \leq 0,05$ according to Fisher's), immorality ($p \leq 0,05$), intolerance to the opinion of others ($p \leq 0,05$), suspiciousness ($p \leq 0,05$) the index of uncompromise has become significantly higher ($p \leq 0,05$).

The study was followed by a change in the behavioral trends in the group before and after training (Table 3).

Table 3. Indicators of behavioral trends in the group studied before and after training (%) (n = 60)

Trends	Before training	After training	φ	p
Dependence - independence	51,9	72,3	1,64	0,05
Sociability - un- sociability	61,5	84,6	1,64	0,05
Acceptance - avoiding "struggle"	44,7	65,8	1,64	0,05

After training, the indicators increased significantly: "dependence - independence" ($p \leq 0,05$); "sociability - un-sociability" ($p \leq 0,05$); "acceptance - avoiding" struggle" ($p \leq 0,05$).

Then we compared the level of social frustration studied before and after training (Table 4).

Table 4. Indicators of levels in social frustration before and after training (%) (n = 60)

Levels of social frustration	Before training	After training	φ	p
High	54,8	32,5	1,64	0,05
Average	23,5	41,7	1,57	-
Low	21,7	25,8	0,55	-

After training, the level of social frustration decreased significantly ($p \leq 0,05$). Afterwards, we measured the level in development of studied empathic abilities before and after training (Table 5).

Table 5. Indicators of the level in development of empathic abilities studied before and after training (%) (n = 60)

Empathy abilities	Before training	After training	φ	p
Rational training	33,5	55,3	1,61	0,05
Emotional Channel	22,4	54,1	1,69	0,05
Intuitive Channel	35,7	48,5	1,23	-
Installations	30,5	52,5	1,61	0,05
Penetrating ability	21,9	44,8	1,62	0,05
Identification	44,6	62,1	1,45	-

After training, the level of development increased significantly: the rational empathy channel ($p \leq 0.05$), the emotional empathy channel ($p \leq 0.05$), the facilities promoting empathy ($p \leq 0.05$), penetrating empathy ($p \leq 0, 05$).

After that, changes of typical ways in treating people before and after training were revealed (Table 6).

Table 6. Indicators for inclusion, control, effect of the subjects studied before and after training (%) (n = 60)

		Before training	After training	φ	p
		In inclusion	High	39,7	60,3
Average	15,4		15,5	0,01	-
Low	44,9		24,2	1,64	0,05
Under control	High	31,5	44,2	1,24	-
	Average	42,8	37,1	0,67	-
	Low	25,7	18,7	0,89	-
In affection	High	24,3	48,5	1,64	0,05
	Average	31,5	32,8	0,27	-
	Low	44,2	18,7	1,64	0,05

After training, the need for inclusion increased significantly ($p \leq 0.05$). The need for control did not change significantly after training. Significant differences were not detected. Significantly increased the need for affection in those who participated in training ($p \leq 0.05$).

Discussion

After social and psychological training, a psycho and diagnostic survey of participants of those volleyball teams that had low team efficiency showed that the number of wins in the tournaments in which the teams of the 2nd group of those who participated increased as a result of training, their team effectiveness increased significantly; psychological climate in teams improved; aggressiveness decreased, and conflict became productive; dependence of players on group norms, values, assessments; increased, desire to communicate, to enter new relationships, to fight actively for improvement of the status in the group and society as a whole increased; the level of social frustration decreased, players became more adequate in behavior and expression of feelings; their empathic abilities are developing intensively; interest in other people increased, in particular team members, the ability to empathy, compassion increased; the participants of training became more interested in social processes and more emotionally open in communicating with other people.

Thus, the results of social and psychological training use in order to form team effectiveness of volleyball players are:

- increase of team efficiency, that is, increase of victories in competitions;
- team unification, transformation it into a team of professionals;
- development of communicative culture of participants, skills of cooperation, mutual assistance and trust increasing;
- development of command rules and mechanisms for their observance;
- conscious orientation towards achieving the goal;
- rejection of ineffective team behavior strategies;
- improvement of team's quality and speed, increasing productivity;
- improvement of psychological climate.

Conclusions

Consequently, we can state that formation of team efficiency for volleyball players is more productive, provided that social and psychological training is introduced into teaching and training process. This technology has several advantages:

A) it is short-term in duration of the direct work of a psychologist with a group, however, long-term as for effect of aftereffect;

B) it is economic because it does not require special equipment and material costs;

C) it is unified, because it can be used in work with different sports teams, but individually unique, since each team is original and each member is special;

D) due to the fact that training situation is educational, none of the participants risks the already formed relations and views, but acquires and uses new experience;

E) work in the group facilitates processes of self-disclosure, self-study and self-knowledge that is very important for forming team cohesion, its compatibility and interaction;

F) this technology makes it possible to obtain feedback for better understanding between team members.

Practical significance of the obtained results is that the proposed program of socio and psychological training can be used in the training process of athletes of the team sports to develop the effectiveness of their sports activities.

Conflicts of interest

The authors declare that there is no conflict of interests.

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