

# Communication Training of Future Sports Coaches in the Context of Neurophysiological Patterns

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**Abstract:** *The article presents experimental verification of improving communicative training for future sports coaches in the context of neurophysiological patterns by expedient changes in pedagogical conditions, namely, forming a value attitude of students towards future professionally-oriented communicative activity; enhancing interactive learning methods; improving educational and methodical support; optimizing the subject-subject interaction of participants in the educational process in simulated situations of professional communication. The research aims to experimentally verify the above-mentioned pedagogical conditions and identify levels of indicators in future sports coaches' preparedness for professionally oriented communicative activity. The research involved 105 students of the experimental group and 106 students of the control group, who voluntarily agreed to participate in the experiment. Research methods include the elaboration of the author's didactic material, modelling of new pedagogical conditions and diagnostic methods. Diagnosis of levels of indicators in future sports coaches' preparedness for professionally oriented communicative activity is carried out with the help of the diagnosed complex of both standard and adapted and modified or specially developed following criteria and indicators of the investigated phenomenon of author's methods. After the formative experiment, the number of students with high and average levels of preparedness for professionally oriented communication activities has increased in EG (by 12.4% and 13.3%, respectively) and at the same time, the number of low-level students has decreased (by 25.7%). The results of the experimental work provide an opportunity to approve the effectiveness of the introduced pedagogical conditions of professionally-oriented communication training for future sports coaches.*

**Keywords:** *Information, pedagogical conditions, value attitude, interactive methods, interaction, communication activity.*

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## Introduction

Communication is the information link of a subject with this or that object (a person, an animal, a car) for the sake of giving specific information (knowledge, ideas, messages, actual data, instructions, orders). A receiver, that is a consumer of information, must accept, understand, learn and take it to achieve results. Therefore, “*communicative activity*” is considered as a set of consistent, communicative actions, acts of activity, the support of which is the natural neurophysiological mechanism of communication and contact among actors of interaction, which provide for the activity of such actors, the development of a standard view and are marked by the presence of a purposeful aim, a motive (a need) and a specific result.

A separate type of communicative activity is professionally oriented communicative activity. Therefore, the activities aimed at achieving specific conscious aims, the content of which is mutual knowledge and exchange of information through different means of communication to establish relationships necessary for professional activity and to obtain high results in sports, come to the fore in the process of training future sports coaches.

Until now, the post-Soviet countries mainly focused on developing narrow professional qualities in future coaches, which is possible through theoretical, tactical and strategic training. However, one could enhance the communicative component independently or in the process of gaining experience and one’s pedagogical style. This led to different efficiency of the training process regarding specialists with different individual communication skills. Comprehensive consideration of all communication aspects in experimental training of coaches in the post-Soviet region constitutes the relevance of this research (Maksymchuk et al., 2020b; Bakhmat et al., 2019; Bezliudnyi et al., 2019; Halaidiuk et al., 2018; Maksymchuk et al., 2018; Sitovskyi et al., 2019).

*Research relevance.* As noted by Gorman et al. (2016), “when people work together as a team, they develop neural, cognitive, and behavioral patterns that they would not develop individually”. It means that neuronal effects during the training process are seen at different levels (neural, psychotic, cognitive, behavioural) and often become latent for the visual observer. At the same time, one should consider the aspects of sport communication, both in the professional training of coaches and practical training of the team (Demchenko, 2021; Prots, 2021; Kosholap, 2021).

The research aims to experimentally verify pedagogical conditions of purposeful improvement and productive organization of the effective system of professionally oriented communicative training for future sports

coaches. Professionally oriented communicative training of future sports coaches took place for the introduction of such pedagogical conditions: forming a value attitude of students towards future professionally-oriented communicative activity; enhancing interactive learning methods; improving educational and methodical support; optimizing the subject-subject interaction of participants in the educational process in simulated situations of professional communication. Also, it is vital to identify levels of indicators in future sports coaches' preparedness for professionally oriented communicative activity is carried out with the help of the diagnosed complex of both standard and adapted and modified or specially developed following criteria and indicators of the investigated phenomenon of author's methods: "Teaching methodology of motives when choosing a profession"; "Study of professional motivation", a test to determine communication needs, "Need for self-improvement", special tests, modular control works, knowledge tests, expert assessment method, socio-communication competence test, method of assessing methods of response during the conflict, method of self-evaluation, that is a questionnaire "Self-test regarding the conformity of knowledge, skills in the field of information-communication technologies to modern requirements of the information society and the labour market", questionnaires, withdrawal from the place of internship.

The article proves that professional training of future sports coaches should be aimed, among others, at the formation of their preparedness to timely overcome moral, psychological and situation crisis difficulties which regularly arise, to development of necessary individually psychological qualities.

## **Literature Review**

The following review of international sources on the research topic proves the relevance of communicative training for future sports coaches and demonstrates the multifaceted nature of coaching communication.

To begin with, scholars also believe that appropriate communication between coaches and the team can serve as a guarantee of injury prevention. Training practices stimulate both team activities and safety-related autonomy for which athletes, bear collective and personal responsibility. Coaches need to feel the boundaries between the requirements of athlete's maximum efficiency and self-preservation. It requires coaches to communicate variably and flexibly and discover an individual channel of communication with each athlete. When surveyed, more than 40% of coaches agreed that after a micro-injury the athlete should be encouraged to leave the game, although

most would be encouraged to continue it (Kroshus et al., 2017; Palamarchuk et al., 2020; Onishchuk et al., 2020; Maksymchuk et al., 2020a). These data indicate the prospects for developing humanistically and personally oriented communication in future sports coaches, even when working with a team.

Another aspect of coaching communication is the relationship between the coach's leadership, his or her authority and athletes' satisfaction with a two-way act of communication. Sari et al. (2012) studied the communication skills of athletes and coaches and participants' satisfaction with training communication by interviewing 250 respondents and found a lack of communicative competency. Indeed, they point out a negative correlation between the need for kinship and positive feedback behaviour, the need for competency and positive feedback behaviour, the need for competency and social support behaviour, the need for competency and behaviour in teaching and coaching (Sari et al., 2012). The biggest problem is the dissonance between athletes' need for autonomy and coaches' autocratic style of communication. However, this dissonance is facilitated by the lack of communicative competencies in athletes themselves.

The professional aspect of coaching communication is the ability to coordinate the team, not only in words but also in facial expressions and gestures. This applies to both communication participants: the coaching staff and the team. As noted by Eccles & Tran (2012), effective communication between team members, including coaches, regarding the game plans and roles and responsibilities of team members, is a prerequisite for achieving team coordination. At the same time, the team in the game must communicate in a coordinated manner and respond accordingly to the coach's signals.

Pedersen (2013) studied strategic management and communication in sports and argued the importance of such research by the growth of the sports industry, and hence communication in it. In particular, he singles out the category of "strategic sports communication model (SSCM)" (Pedersen, 2013). In the context of this three-component category, coaching communication is not only internal team interaction but also the presentation of the team, its brand and achievements, communication with the media, participation in the promotion of sports information products. All this requires a broader approach to the concept of the coach's communicative competency.

Kassing et al. (2004) similarly justify the content and volume of communication skills in coaches and other participants in sports as a form of public consciousness. They consider the sports community, although relatively limited, still accessible and pervasive and include coaches, referees,

spectators, media representatives, fan clubs, professional sports organizations in communication. They claim that membership and participation in the sports community are carried out communicatively and supported by its members, and communication functions make up and give meaning to the sports experience. For this reason, they argue that the sports community is a communicatively rich region that deserves the attention of communications professionals (Kassing et al., 2004).

Given that sport is not a communication process itself and is complicated by many factors of context, situation, rules, regulations, participation of unequal participants in communication, one can consider Burleson's (2009) theory of "direct and interactive factors" of such interaction as valid. The author defends the theory of the double process of communication and its auxiliary results (results of auxiliary interactions). These aspects need further development in the field of sports communication.

Turman & Schrodt (2004) explored the correlation between coaches' behaviour and athletes' affective learning behaviour. They proved that social support and positive feedback from the coach had a more positive effect on the emotional component of the training process than democratic or autocratic leadership (Turman & Schrodt, 2004). The studies on the impact of coaches' communication skills show that "the climate of skills is a positive predictor of athletes' satisfaction with training, while the climate of efficiency and verbal aggression of coaches act as negative ones" (Bekiari & Syrmipas, 2015). Bekiari & Syrmipas (2015) conclude that the coach's verbal aggression during training negatively affects the feelings of athletes and, as a result, their achievements, so the coach should care primarily about the emotional climate, not performance.

Today, neurosciences can confirm the presence and nature of crucial cognitive processes that manifest themselves in the psychosocial effects of activity (communication, interaction, reflection). However, for this research, it is important to identify those patterns that are most correlated with the coach's professional behaviour. Being educators, the authors of the article cannot measure and control the communicative and activity-related characteristics of the object of study neurophysiologically. Nevertheless, they can select pedagogically relevant aspects justified by neurosciences.

It must be noted that the coach's communication is rather specific. This specificity lies in at least two aspects: a) by professional-subjective nature, a coach is always a leader, a charismatic personality, who reacts to any changes instantly and constructively; b) a coach always deals with a group consisting of autonomous subjects but acts by rules. This specificity

requires special educational conditions for developing communicative competency in future coaches. To form and implement coach communication practically, one should pay particular attention to the neurophysiological mechanism which operates based on subjective assessment of social consequences for the communicator and the recipient, their expectations from the exchange and the corresponding behaviour change (Falk et al., 2015). One must admit that coach communication with athletes is unequal. It relies on hierarchical values and agreements which corresponds to subconscious mechanisms operating in nature (a flock, a pride). Both the recognition of the leader and clear agreement of team members with them follows the relic mechanisms of communication that can be used in organizing the coaching process.

Given that sports communication is often implicit, reduced and based on hints, signals and conventional non-verbal cues, the important neurophysiological mechanism of the brain is its predictive, intuitive and anticipatory functions. Besides, it is essential to form conventional and then automatic predictors of communication results that determine the neurophysiological specificity of implicit professional coach communication (Falk et al., 2015).

It is possible to develop and consolidate a neurophysiologically complex system of signals, stimuli, predictors and reactions in a particular only over time. According to Blaser & Seiler (2019), “one of the psychological mechanisms that contribute to effective and efficient team actions is team cognition, defined either as shared knowledge states about game situations, teammates’ skills, and action probabilities or direct communication processes in the team action itself”. Therefore, researchers justify the principles of teaching communication with the participation of the coach and the team, which over time reduces both time-related and cognitive costs of such communication.

Also, this research relies on two other important neuroscientific positions, which are relevant to the chosen subject. First, neurophysiological (subjective) and psychological (an internal picture of the world) components of personality are built and function in “the correlation of corporeality (soma), psyche and environment” (Pickersgill et al., 2011). At the same time, corporality and non-verbality are of great importance in sports. Second, the solutions to problems related to leadership, charisma and management of group activities directly depend on one’s integrity which is neurophysiologically dual. As noted by Schechter (2015), “the hemispheres operate independently of each other insofar as they interact via the mediation of effection and transduction – via behavior and sensation,

essentially”. When elaborating educational conditions, the authors of the article strived to take into account the above-mentioned factors as much as possible.

## Material & Methods

Research methods include modelling of hypothetically valid conditions for selecting and developing the author’s didactic material focused on profession-oriented communicative training of future sports coaches; applied diagnostic methods (questionnaires, tests, surveys). The results of the experiment are presented by graphic figures.

Diagnosis of levels of indicators in future sports coaches’ preparedness for professionally oriented communicative activity is carried out with the help of the diagnosed complex of both standard and adapted and modified or specially developed following criteria and indicators of the investigated phenomenon of author’s methods: Teaching methodology of motives when choosing profession”; “Study of professional motivation” (Moskalenko, 2019), a test to determine communication needs (Orlov, 1989), “Need for self-improvement” (Holovaty, 2005), special tests, modular control works, knowledge tests, expert assessment method, socio-communication competence test, method of assessing methods of response during conflict (Grishina, 2000), method of self-evaluation, that is a questionnaire “Self-test regarding conformity of knowledge, skills in the field of information-communication technologies to modern requirements of the information society and the labour market”, questionnaires, withdrawal from the place of internship.

To assess the preparedness of future sports coaches for professionally oriented communicative activities, empirical data obtained in CG and EG at the stated stage were compared with the results of the forming stage of the experiment, which made it possible to assess the development dynamics according to the selected indicators.

To compare the dynamics in the levels of forming criteria and their indicators, methods of mathematical statistics were used: changes in statistical characteristics of EG and CG on specific criteria of significance was analyzed.

The developed methodology of professionally oriented communicative training of future coaches was implemented during three successive stages: preparatory, main, final.

*The first stage (course 1) – preparatory* – is aimed at forming the positive attitude and persistent interest of students in the chosen profession, stimulating the need for communication and the desire for self-

improvement. At this stage, such a pedagogical condition was implemented: value attitude formation towards the future profession. The meaningful line of tasks implementation of the first stage provided for activation of out-of-school work with dialogue interaction, namely: educational talks, round tables, thematic meetings with specialists in practical subsections, veterans of sports and known personalities; production of the student newspaper, excursions, sports schools and public institutions, participation in sports, social, cultural and educational activities.

*The second stage* (courses 2-3) – *main* – is aimed at mastering students of basic concepts, types and functions, moral and ethical norms and rules of professionally oriented communicative activity of sports coach, learning of professional terminological apparatus and information-communicative technologies, acquisition by students of the ability to establish and maintain contacts with subjects of professional activity, development of their ability to resolve conflicts. Such pedagogical conditions were implemented at the second stage: intensification of interactive methods of training and improvement of educational and methodological support.

The arsenal of modern learning technologies proposed in the study are technologies of collective mental activity implemented through interactive learning methods (“learning discussions”, “brainstorming”, “open discussions”, “learning partners”, situational, business games, discussions, work in groups, interactive lectures (lecture – “conference”, “lecture-discussion”). The main stage covered the use of the game method and communication Internet technologies, the development of terminology dictionaries and other professionally oriented literature, revision of video releases.

In addition to the methods mentioned above of the study, the second stage of professional communication training (course 3) included “Communication workshop” aimed at mainstreaming the problem of professional communication training, awareness of future coaches’ behaviour in different communication situations and rational use of personal resources.

The purpose of *the third* (course 4) – *final* – stage of implementation of the technique of professionally oriented communicative training of future sports coaches was to consolidate knowledge, skills and acquisition of stable skills of professionally oriented communicative activity. This stage of professionally oriented communicative training of future sports coaches realized such pedagogical conditions as optimizing the subject-subject interaction of participants in the educational process in simulated situations of professional communication.

It is planned at *the final stage* to carry out various types of individual tasks: preparation of materials for meetings, newspapers, television and radio broadcasting; replies to applications, appeals of citizens; the processing of official documents by the state language; “playing” participation in the acceptance of citizens; preparation for public speech, conversation, presentation on the chosen topic; writing article, theses, essay, characteristics, request, response to the request, business letter; preparations for the discussion on a specific topic; scheduling of the subsection’s work (annual, quarter).

At the stage of the forming experiment in CG, the process of professional training of future sports coaches took place according to the usual regulations, did not stand out from the general scheme of educational work and did not have a particular focus on the formation of preparedness for professionally indicative communicative activity.

The particular methodology defined the basis of professionally-oriented communication training of all EG, organically combined with traditional educational disciplines. The field for the formation of future sports coaches’ preparedness for professionally oriented communicative activities includes the chosen educational disciplines “The Ukrainian language (on the professional direction)”, “Basics of management”, “Basics of information technologies”, “Organization of sports competitions”, “Communicative workshop”.

Systematization, generalization and analysis of the obtained results of experimental professionally-oriented communicative training of future coaches; comparison of the experimental results with the projected results; description of the progress and results of the study based on statistical data processing methods; formulation of general conclusions of the work and outline the prospects for further scientific research were carried out at *the generalizing stage*.

The experimental work was carried out at the premises of National University of Civil Defence of Ukraine, Lviv State University of Physical Culture, Lviv State University of Life Safety of the State Emergency Service of Ukraine, Sumy Makarenko State Pedagogical University, Pavlo Tychyna Uman State Pedagogical University, Vasyl Stus Donetsk National University.

The intentions of entrance and initial levels of forming the investigated phenomenon, namely communication training were made in EG (105 students) and CG (106 students) to determine the efficiency degree of the introduction of pedagogical conditions of professionally-oriented communication training of future sports coaches. All participants in the experiment voluntarily agreed to participate in it.

## Results

The generalization of results of the analysis of scientific methodological literature on the problem of professionally oriented communicative training of specialists, highlighting the peculiarities of the educational process, taking into account the data of the final stage of the experiment and the found factors of positive influence on the investigated process served as a basis for the statement. Therefore, professionally-oriented communicative training of future sports coaches will be valid under such *pedagogical conditions*: forming a value attitude of students towards future professionally-oriented communicative activity; enhancing interactive learning methods; improving educational and methodical support; optimizing the subject-subject interaction of participants in the educational process in simulated situations of professional communication.

*The first pedagogical condition* (forming a value attitude of students towards future professionally-oriented communicative activity) provides for the introduction of information on the significance and value of the future profession into the content of traditional educational disciplines; professional orientation of extra-curricular activities.

*The second pedagogical condition* (enhancing interactive learning methods) covers the active use of such methods of study as “working in pairs”, “educational discussions”, “microphone”, “brainstorming”, “role-playing”, “debate”, “discussion in the style of the television talk show”, Internet technologies, interactive lectures, modelling of real professionally-oriented communicative situations.

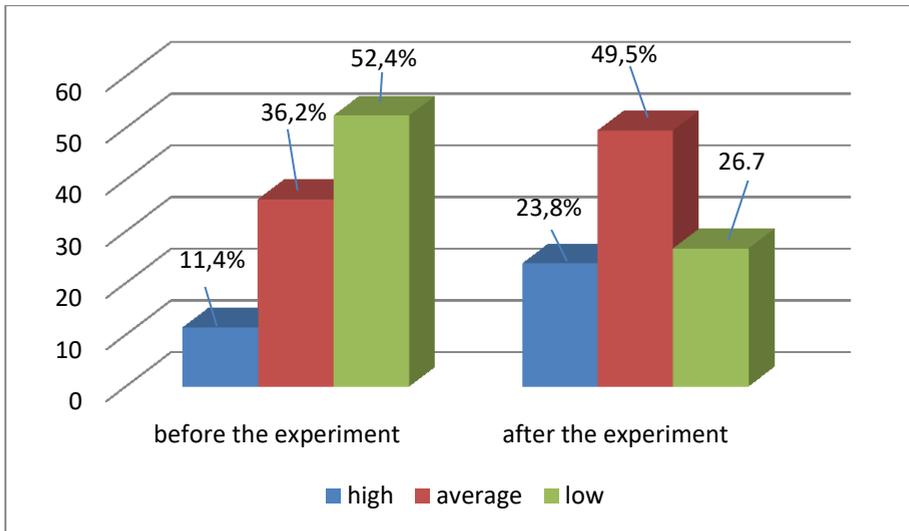
*The third pedagogical condition* (improving educational and methodical support) determines updating and development of educational and methodical complexes of educational disciplines, creation of textbooks and manuals, reference literature, teaching and methodical support of carrying out practical classes on separate modules of educational disciplines of the cycle of professional (mandatory) training.

*The fourth pedagogical condition* (optimizing the subject-subject interaction of participants in the educational process in simulated situations of professional communication) determines the activation of educational activity in students by updating their motivational resources, reflection; saturation of professionally-oriented communication training with tasks of a problematic and search nature, dialogue, game and other forms of group interaction with the change of role positions, experienced work; creation of a favourable emotional environment as a result of the organization of

situations of choice and success, a climate of trust and cooperation between all participants of pedagogical interaction.

The comprehensive vision of pedagogical support of the forming process of the student's preparedness for professionally oriented communicative activity shows the assumption of ensuring, as a result of compliance with the above-mentioned pedagogical conditions, a combination of objective possibilities of keeping the study, methods, organizational forms and material resources of their implementation, system, continuity of such an implementation throughout the whole term of study.

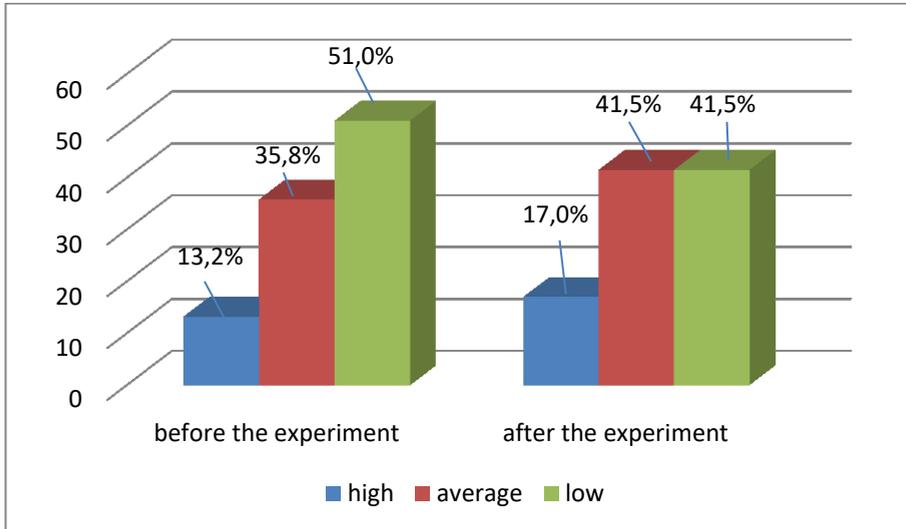
The above-mentioned results can be represented mathematically and graphically. Thus, the number of students with high and average levels of preparedness for professionally oriented communication activities have increased (by 12.4% and 13.3%, respectively). At the same time, the number of students with a low level of preparedness formation has decreased (by 25.7%) after the formative experiment in EG (see Fig. 1).



**Fig. 1.** Dynamics of levels of preparedness formation in EG students for professionally oriented communication activities

It was recorded that the increase in indicators in CG was less significant in comparison with the significant increase in the quality indicators of EG: after the formative experiment, the number of students with high and average levels of preparedness for professionally oriented communication activities has increased (by 3.8% and 5.7%, respectively), but

the number of students with the low level of preparedness has decreased (by 9.5%) (see Fig. 2).



**Fig. 2.** Dynamics of levels of preparedness formation in CG students for professionally oriented communication activities

Generalization of results of the forming experimental work gives grounds to approve about positive dynamics increase of the level of preparedness in future sports coaches on the selected criteria in EG students and less significant dynamics of such level in CG.

Comparison of qualitative characteristics of control and experimental groups allowed one to trace the development dynamics of communicative abilities in future sports coaches, in particular, tangible improvement of talking skills, stress resistance, preparedness to establish contact, organizational skills.

## Discussion and Conclusions

The authors' contribution to the research in question lies in the fact that, for the first time, empirical material of the post-Soviet region has made it possible to show an increase in future sports coaches' readiness under the selected criteria within appropriate pedagogical conditions.

The analysis of modern scientific content gives the grounds to claim that, despite a broad representation of the concepts "communication" and "contact", the category status and the maintenance of these concepts are not single specified. It was found out that individual scientists (Kislov, 2013;

Yakovliva et al., 2002) consider synonymous the concepts “communication” and “contact”, namely, the process of transmitting information from one person to another, as well as transferability and exchange of information to influence social processes. Communication can also be considered as the process of interaction between several persons, which consists in the exchange of information among them of cognitive and emotionally appreciative character and communication is explained as “message”, “transferability of information”, stressing its one-sided, narrow nature. The third approach to the problem of the ratio of concepts is based on the idea that “contact” appears as a form of communicative activity. We agree with Drahomyretska (2005), Lomov (1981) in understanding the concept of “communicative activity” as broader, more significant in comparison with the concepts of “communication” or “contact” taking into account the possibility of considering them as separate types of communicative activity and in interpreting communicative activity as a process of mutual exchange of information, which predetermines mutual understanding and provides feedback between participants.

This research has confirmed the following: coaching activities are characterized by rapid variability of the emotional component of communication, as well as by frequent interspersions of rational and irrational reactions and stimuli (Hastings, 2008). Despite the team’s reactive profile and multi-modal feedback, the coach must be able to exclude empathy and maintain a left-hemisphere rational dominant, especially during team games.

The authors of the article have also proved the importance of neurosocial and neuropsychological aspects of coaches’ subjective reflection, reaction to feedback, emotional and stress resilience as the basis of their professionalization (Kazlauskiene & Barabanova, 2020).

Furthermore, this research highlights the importance of developing teacher’s neurophysiological and psychological potential, subjective reflection, organization and perception of verbal and non-verbal feedback (Kazlauskiene & Barabanova, 2020). These parameters have proved to be especially relevant for developing coach communication as a specific activity that requires the ability to make quick decisions and produce adequate responses in situations of cognitive or activity-related uncertainty.

It is rather obvious that the core of a future coach’s communicative personality should be not so much speech skills as leadership skills, psychological stability, emotional and volitional maturity (Effendi Rustan et al., 2020). Such qualities are fully developed in life and practice, rather than at the stage of university education.

The definition of *professionally oriented communicative activity of sports coaches* as an activity aimed at the achievement of specific conscious aims is formulated, the content of which is mutual knowledge and exchange of information through different means of communication to establish relations necessary for professional activity.

As a result of the analysis of the problem of the expert's professional training, the concept "professional training of a sports coach" is defined as the purposeful process of mastering a set of world outlook, shared cultural and specialized knowledge, abilities, skills and experience for the successful performance of tasks to destination.

By the results of the scientific search the author's position on the concept "*professionally-oriented communicative preparation of future sports coach*" as a set of forms, methods and means of study and education of future sports coaches in higher education institutions, which ensure the development of integrative state of the personality of the future specialist, expressed in preparedness for professionally oriented communicative activity.

It is noted that the result of professional training of the specialist should be preparedness of the person for professional activity, long, well-established, ground-breaking, easily updated without the necessity of resumption through the atypical or emergency professional situation.

We consider promising the introduction of additional training disciplines of communication direction, an increase in the number of hours for the study of language disciplines.

It was confirmed that it is advisable to adjust the content of the curricula of compulsory cycle disciplines and to expand their content by introducing additional modules, which will strengthen the practical communicative component of the general professional training and will contribute to the students' preparation for professionally oriented communicative activities.

It is justified theoretically and confirmed experimentally that practical professional communication training of students in higher education institutions is possible as a result of the combination realization of such pedagogical conditions: forming a value attitude of students towards future professionally-oriented communicative activity; enhancing interactive learning methods; improving educational and methodical support; optimizing the subject-subject interaction of participants in the educational process in simulated situations of professional communication

It was stated that the significant growth of quality indicators in EG is predetermined by the creation of pedagogical conditions and their introduction into the educational process of professionally oriented

communicative training of future sports coaches in institutions of higher education.

*Research limitations.* A characteristic neurophysiological specificity of coaches' professional communication is the conventionality and automaticity of interaction. This is due not only to sports' rules but also to conditionally fixed signals and reactions needed in sports because of the lack of time and resources for explicit communication. This correlates with Cappella's (1991) views on the biological origin of automated models of intersubjective interaction, which often becomes a priority in the sports environment. In the course of group training or after the coach's tips during the game, one can observe a rapid change in neuroprocesses (regulation – stimulation – emotional reaction) which prompts specific studies on reflective communication.

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