

A Test to Express Diagnostic Cohesion of Football Team

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Abstract—We proposed to assess the cohesion of a football team by its subject-goal and subject-value unity according to the A.V. Petrovsky theory. Goal unity was measured by the degree of compliance of the priority targets for various players in the team. Values were estimated by the coincidence of the ideas about a perfect football player. On the basis of the provisional diagnosis of the six teams, we had made the lists of goals and values. The tests were piloted on 35 football teams. The results allowed not only to compare quantitatively the cohesion of the different teams, but also to identify subgroups within the team.

Keywords—Cohesion, football, psychodiagnostic, soccer, sports team, value-orientation unity.

I. INTRODUCTION

MODERN sport makes high demands on the efficiency of people interaction within the football team. Any method of influence (teambuilding trainings, etc.) suggests an objective diagnosis of the relationships in a small group before and after their implementation. With the help of an objective assessment of team cohesion, its weaknesses can be defined, which must be solved in the subsequent psychological impact. More than 30 years ago, A. V. Petrovsky formulated the theory about the activity mediation of interpersonal relations in the group, which was confirmed on the materials of numerous empirical studies [1]-[3]. According to these views in social psychology, cohesion was regarded as a phenomenon reflecting the degree of interpersonal relations mediation with content of the joint activity [4]. The main indicator of cohesion was the value-orientation unity of the group [1], [3]. However, at present, for diagnostics of cohesion in sport teams or any other small groups, the techniques aimed at studying the emotional side of the phenomenon are primarily used, but not at a joint activity, for which, in fact, this specific small group was organized [5]-[8]. For the diagnosis of cohesion in sport, psychologists and coaches usually use the sociometry, the Seashore index questionnaire, or expert evaluation [4], [6], [8]. Nowadays, to assess the cohesion of a sports team, the group environment questionnaire is usually used (Group Environment Questionnaire, GEQ) [9]-[12].

Sociometrical methods are probably the most popular and often most criticized methods. It allows to identify “likes” and “dislikes” among the members of a small group, to determine the sociometric status of individuals, and to visually indicate

emotional subgroups within the team [4], [6], [2]. The method of determining the Seashore index of group cohesion is aimed at assessing a person's relationship to the group, its members, and management [13], [14]. The method of expert evaluation of cohesion of the training group allows identifying the friendly, comfortable stay in the group [15]. Questionnaire GEQ determines individual perceptions about team cohesion, motivation, staying in it, business, and interpersonal relations [16]. These methods do not correspond to theoretical ideas about the nature of the phenomenon of cohesion; that is why, they have been criticized [1], [2], [4], [17].

In the framework of the theory about the activity mediation of interpersonal relations in the group, special tests have been developed for the diagnosis of the cohesion of the small group used in educational and industrial groups. However, because the most important characteristic of the group is the work for which it exists, it is necessary to adapt these tests before applying them in sports and in particular in football teams. Following the papers of Dontsov [1] and Nemov [2] as specific indicators of value-orientation unity, we evaluated subject-goal and subject-value (abbr. goal and value) unity of the group.

The aim of this work was to develop the techniques for cohesion diagnostic (subject- goal and subject-value unity) of the football team.

II. METHODS

Development and testing of the technique were conducted on 35 football teams, competing for professional football schools in Moscow, and there were 684 athletes in total (592 males and 92 females). Age of respondents was from 10 to 20 years.

The technique proposed by Nemov [2] and others [1] was aimed to rank some list of goals or values that are directly related to the main activities of the team. One of the way to determine the values relating to the main activities of the group was the identification of the qualities that he describes for the ideal group member, in this case the perfect footballer [1], [2]. Therefore, in the preparatory phase, a survey was conducted on six football teams (three males and three females) in which athletes were asked to answer the following questions:

1. Describe in free form what should be a perfect, an ideal player in football (regardless of role). Base on your own opinion. Try to use at least 5-10 characteristics of an ideal player.

The second question concerns the goals set for the players.

2. Write 5-10 goals that were set by the coach for your team

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and for you personally for the current season. If you want, also specify the goals you would like to put in front of you or team.

- The following goals were set: _____
- I would like to put these goals: _____

The responses of the athletes were analyzed using content analysis. From all the characteristics of an ideal player, we selected the ten most frequently mentioned response by players. It is worth noting that there were no significant differences in the frequency data of the ten qualities in the female and male teams, so the final list for all teams was the same. Based on the results of the content analysis, objective ranking task of values was compiled:

You are offered a list of 10 qualities that can have a football player. Your task is to assess which qualities should be characteristic of a perfect, an ideal player (regardless of role).

Read attentively all the qualities and choose the one in the first place should be for the perfect footballer. Mark it with the number "1". From the remaining, select the second important quality and mark it with the number "2". The third mark with a number "3" and so on. Do the same with all the remaining qualities, defining them from 1 to 10. The least important quality will be the last and will take the 10th place.

- Rapid
- Dexterous
- Resolute
- Bold
- Strong
- Hard-working
- Patient
- Highly skilled
- Intelligent
- Purposeful

In the same way, we analyzed the responses of athletes for the goals which were put before them and which they themselves would like to deliver. Without giving a complete list of responses, we noted, however, that the objectives of boys and girls to some extent differ from each other. For example, among women's teams, the goal "lose weight" was met five times, which was completely absent in the responses of men's teams. Also, typically just for women's teams, the goal was "to get into the Premier League". In the men's teams, goals such as "to take our chances" and "to give all in every training session" were met often. Therefore, for subsequent ranking for female and men's teams, we formed two different lists of goals.

Based on the responses of the players we compiled a list of the most popular goals set a team or individual players.

Read all of the goals and select the one which is most important to you personally. Mark it with the number "1". From the remaining, select the second most important goal and mark it with the number "2". Then do the same with all remaining. The least important goal will be the last and will take the 10th place.

Female's list:

- To compete suitably in Moscow boys championship
- To get into the Premier League

- Develop speed
- Improve technique
- Become a more cohesive team
- To get to Russian national team
- To take first place in the tournament
- To gain a foothold in the main team
- To lose weight
- To win all the matches

Male's list:

- To compete suitably in the championship of Moscow
- Develop speed
- Improve technique
- Become a more cohesive team
- To take first place in the tournament
- To gain a foothold in the main team
- To win all the matches
- To play better
- Make the best during every workout
- To take our chances

To determine the coincidence degree of the values and goals of each team member with other players, we considered the Spearman correlation coefficient in SPSS 21.0, which allows automatically calculating the correlation of "each with each".

III. RESULTS AND DISCUSSION

Our technique for value and goal unity diagnostics was tested by the 35 football teams. In some teams, the most popular goals were "to gain a foothold in the main team" and "to win all the matches" and others preferred "to compete suitably in the championship of Moscow". The most popular values were, on average, hard-working, intelligent and resolute.

Quantitative data analysis allowed to calculate the coefficient of cohesion of each team, which was calculated as the mean of all r-Spearman. Accordingly, when the value was higher, then overlaps were larger between the goals or values of players, and the team was more cohesive. For different teams, we obtained average values from 0.00 to 0.51 ($x_{avg}=0.20$; $\sigma=0.10$). According to the statistical Kolmogorov-Smirnov test ($p=0.413$; $p=0.964$), the distribution of the cohesion diagnostic results was normal in both used methods (Fig. 1). It is possible, therefore, to assume that if the received diagnosis result of the team cohesion was lower than 0.10 ($x_{avg}-\sigma$), the team cohesion was low. Values from 0.10 to 0.30 corresponded to the average level of cohesion. The team with the higher of 0.30 can be called tight.

A positive correlation ($p\leq 0.01$) between the goal and value unity was also found (Fig. 2). This confirms the theoretical assumption that subject-goal and subject-value unity of the group are demonstration of the same psychological phenomenon; namely, the value-orientation unity or the degree of interpersonal relations mediation with the content of the joint activity. Thus, for the diagnosis of a sports team, one can use only one of the two methods, with a high probability of predicting the result of the second. However, it should be noted that there were cases of atypical relationship between

value and goal unity. These include the team "A", which had 0.51 in the method of determining the value unity and 0.12 in the goal unity test, as well as a few other teams (Fig. 2). In this regard, we can recommend the use of both methods for the sports team cohesion diagnosis.

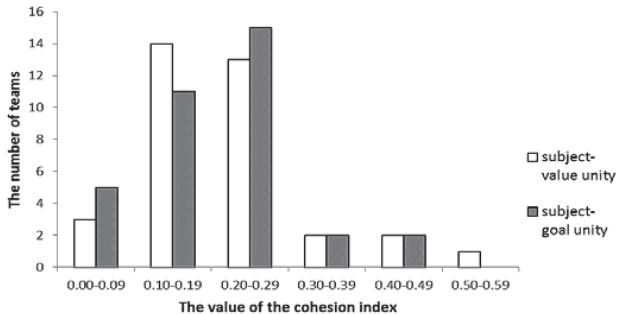


Fig. 1 Distribution of the cohesion diagnostic results for 35 football teams

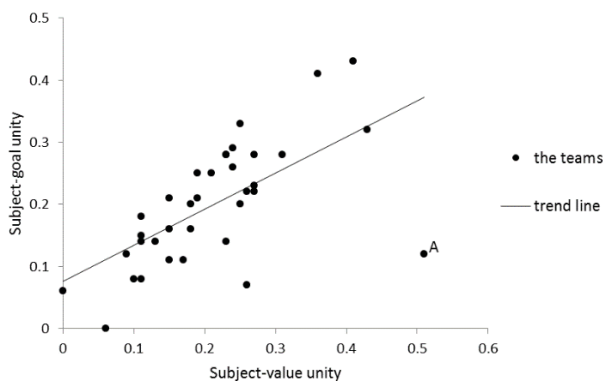


Fig. 2 Ratio of value and goal unity of the teams

We have also identified a direct correlation between average age in the team and its value unity ($p \leq 0.01$), which may be associated with duration of existence and the experience of joint activities within the teams. Between age and goal unity, a positive relationship was also observed at the level of the trend. The team cohesion was not dependent on the number of players in it. Differences between men's and women's teams were not detected.

In addition to analyzing overall team cohesion, a qualitative analysis of the data allowed us to identify cohesive subgroups in the team, different members, the degree of goals and values compliance between the coach and athletes, and so on. Among the most diagnosed teams, there were no clear identified subgroups, and goals and values of the coach were consistent with the values and goals of most players. Usually, there were several different players, whose results differed from the average for the team. In each case, to identify the causes of this "loss" of part of the players from the team, the collection of additional information was required, e.g. by using an interview. It may be noted that, in most cases, these players were newcomers in the team. However, in one of the teams who participated in the study, we identified two independent

subgroups with different values (Fig. 3).

From Fig. 3, it is clearly observed that the team has a cohesive subgroup, consisting of 15 players. Values of these players were very similar. It should be noted that, during the diagnostic, there were no possibilities for copying answers. Values of a coach were not related to the values of these players, and to some extent even reversed the relationship ($r_{\text{avg}} = -0.218$). At the same time, the coach can be attributed ($r_{\text{avg}} = 0.440$) to the second command subgroup, which includes players from 16 to 19.

A simple quantitative analysis would show that the cohesion of the team was average ($r_{\text{avg}} = 0.276$). However, in reality, the cohesion of both subgroups was very high ($r_{\text{avg}} = 0.515$ for players of the first subgroup; $r_{\text{avg}} = 0.425$ for players of the second subgroup). As the most important qualities of the ideal player, the members of the first subgroup pointed out: hard-working (in the subgroup average rank of 1.60), purposeful (2.07), and patient (3.27). In the second subgroup, which included the coach, the most important qualities were: purposeful (2.60), rapid (3.20), hard-working (3.20), and highly skilled (3.20). In general, in the second subgroup, there was a greater variation of opinions about the most important qualities and a high consensus on the least important characteristics of the ideal player, in contrast to the first subgroup.

The same qualitative analysis can be performed for processing data of the goal unity diagnosis. Unfortunately, this team was not filled in the questionnaire measuring goal cohesion, because it consisted of players aged 19-20 years, acting in senior championships of teams, and the goals collected in the first stage of the study could not be transferred from youth teams to professional without the necessary improvements. In this sense, the technique to diagnostic subject-value unity was universal. Thus, the developed tests allow carrying out objective diagnostics of subject-goal and subject-value unity of the football team, which were indicators of interpersonal relations mediated by the content of the joint activity. We have shown and understood that, in this way, the cohesion largely depends on the duration of existence of the team rather than the number or gender of players in it. Despite the fact that the goals and the values were statistically associated with each other, in rare cases, the team might have a high subject-value unity and the low subject-goal unity. In our opinion, it was due to the fact that the values were more stable characteristics, while the goals could vary from season to season (or every few years).

The developed tests could be applied for both standard diagnosis and diagnosis of cohesion in a situation when there were temporary or long-term difficulties in team interaction, interpersonal conflicts, low athletic performance, and so on. The advantages of the developed test were the speed of its implementation and processing, the ability to use in children's teams, and the objectivity of the resulting data. The most informative results can be obtained with a combination of and qualitative data processing approach, which allows not only to compare the level of cohesion in different teams, but also to reveal the structure of subgroups, "lost" members, and the

degree of integration of the coach inside the team. The method allows obtaining also information about the goals and values

of the individual players and the team as a whole.

Team members	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Coach
1																				
2																				
3																				
4																				
5																				
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17																				
18																				
19																				
Coach																				

Fig. 3 Results of correlation analysis of the one group's subject-value unity test Note: grey cells - a positive correlation ($p \leq 0.05$)

IV. CONCLUSION

The developed tests for the diagnostic of the subject-value and subject-goal unity could objectively determine the degree of cohesion in a football team. Approbation of the developed test showed the possibility of its use in male and female football teams, for the players who were older than 10 years. The most informative was the combination of quantitative and qualitative analysis of the diagnostic results by the proposed method. The technique can be adapted for the use in the other sports and in the other age groups, as described in the paper

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