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THE DYNAMIC OF THE SOCIO-AFFECTIVE RELATIONS IN A ROMANIAN RURAL HANDBALL SCHOOL TEAM

OANA RUSU[1*], RITA-MARGIT HRIŞCĂ[2], RENATO-GABRIEL PETREA[1]

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ABSTRACT. Introduction: It is human nature to interact with the other. Interpersonal relationships appear as an invisible connection beyond the spoken words and the informational content of the communication. Starting from the age peculiarities of the students, from their motor possibilities, but also from the personality of each one, taking into account the affinities in the relationship with the others, the teacher can form a group in which to obtain performance with a rural school team. **Objectives:** 1) identifying the types and meanings of relationships between group members (acceptance, rejection, indifference relationships) and 2) identifying gender influences on the dynamics of relationships between target group members. **Methods:** The sociometric test was applied on the handball team of the Romanian rural school, 28 students, 14 14 boys and 14 girls), of different ages, between 11 and 14 years old. The average age of the group is 12.89 years, 13 years for boys and 13.64 years for girls. **Results:** Male subjects received more positive choices than rejections compared to female subjects. 3 subjects (2 boys and a girl) are the most popular. Most members of the group, 14, are in zone B (Liked more than disliked), 8 b and 6f. Another 7 (1b and 6f) are in zone C (Disliked more than liked). None are in zones E (Rejected) and F (Neglected). **Conclusions**: The first positive elections were aimed at members of the same gender. Male subjects focused their first positive choices more on same-sex subjects, but most girls focused more on male subjects. The rejection options are oriented towards the other gender. There is at the group level an individualized acceptance according to the personality, qualities and sports abilities of each member of the group.

Keywords: *socio-affective relation, handball, Group Dynamics, personality, sociometric*

[1] *Alexandru Ioan Cuza University of Iaşi, Romania*
[2] *School Zmeu, Lungani, Iaşi, Romania*
[*] *Correspondonding author: broana@uaic.ro*

REZUMAT. ***Dinamica relațiilor socio-afective într-o echipă de handbal de la o școală rurală românească*. Introducere.** Stă în natura omului să interacționeze cu celălalt. Relațiile interpersonale apar ca o conexiune invizibilă aflată dincolo de cuvintele rostite și de conținutul informațional al comunicării. Plecând de la particularitățile de vârstă ale elevilor, de la posibilitățile motrice ale acestora, dar și de la personalitatea fiecăruia, ținând cont și de afinitățile în relaționarea cu ceilalți, profesorul poate alcătui un grup în care să obțină performanță cu o echipă școlară din mediul rural. **Obiective.** 1) identificarea tipurilor și sensurilor relațiilor dintre membrii grupului (relații de acceptare, respingere, indiferență) și 2) identificarea influențelor genului asupra dinamicii relațiilor dintre membrii grupului vizat. **Metode**. Testul sociometric a fost aplicat pe echipa re handbal a școlii din mediul rural românesc, 28 de elevi, 14 14 băieți și 14 fete), de vârste diferite, cuprinse între 11 și 14 ani. Media vârstei grupului este de 12,89 ani, 13 ani pentru băieți, respectiv 13,64 ani pentru fete. **Rezultate.** Subiecții de gen masculin au primit mai multe alegeri pozitive decât respingeri în comparație cu subiecții de gen feminin. 3 subiecți (2 băieți și o fată) sunt cei mai populari. Cei mai mulți membri ai grupului, 14, sunt în zona B (Liked more than disliked), 8 b și 6f. Alți 7 (1b și 6f) sunt în zona C (Disliked more than liked). Niciunul nu e în zonele E (Rejected) și F (Neglected). **Concluzii.** Primele alegeri pozitive au fost orientate către membrii de același gen. Subiecții de gen masculin și-au orientat primele alegeri pozitive mai mult către subiecții de același gen, însă cele mai multe fete s-au orientat mai mult către subiecții de gen masculin. Opțiunile de respingeri sunt orientate către genul celălalt.. Există la nivelul grupului o acceptare individualizată în funcție de personalitatea, calitățile și abilitățile sportive ale fiecărui membru al grupului.

Cuvinte cheie: *relație socio-afectivă, handbal, Group Dynamics, personalitate, sociometrie*

INTRODUCTION

It is human nature to interact with each other. Interpersonal relations represent an invisible connection beyond spoken words and the informational content of the communication.

Within the formal educational environment, in school, between the social actors (teacher/student, student/students), many relations – developed during the classes – exist/coexist. It represents an environment where students relate to one another in social interactions depending on personal needs and necessities (Waluyo et al., 2019; Neculau, 1983). The group represents both a setting and a means for training the social actor (the student) and a therapeutic tool (Neculau, 1981, 2007).

From a systemic perspective, sports groups are considered small social groups. They are analysed as complex, adaptative and dynamic systems (Arrow et. colab., 2000). The interactions between the group members and the group with other groups lead to three group dynamics: local dynamics – regarding the internal activities of the group; global dynamics – regarding the emerging properties of the group; and contextual dynamics – regarding the group being placed in a concrete context modelling the group from the standpoint of composition, coherence and behaviours of its members (Rusu, 2012).

The insight into school sports groups represents an elaborate endeavour, given the particularities of sports activities (Carron & Hausenblas, 1998). The group climate is both formal and informal, and teachers must consider several aspects when organising and conducting lessons with the school's representative team. These aspects include the small number of members, the educational nature of the purposes and group objective, the particularities of the members (related to selection in a sports branch). Teachers should also take into account the formality provided by the school regulations and the standards serving as criteria for assessing individual and group behaviours, the direct, face-to-face interactions of the group members, a certain formal and informal group structure, with the distribution of role and status structures of the educators and the educated, emerging processes and states as a result of the interaction between members (cohesion, identity, satisfaction, etc), group identity in relation with other groups (Neculau, 2003, 2007).

In this study, we analysed the representative handball team of a Romanian rural middle school in Iași County, including students from all four study levels. The training sessions were carried out after the teaching activities, for an hour, once a week, in the outdoor school field, during the academic year, except for the holidays and unfavourable weather (cold/and or rainy).

Understanding the relations between students, the way a collective is formed and the attainment of performance (mostly in sport) represents a challenge to which we tried to respond. We chose to analyse the dynamics of relating processes between the members of a mixed representative handball team from the Romanian rural area.

The teaching profession involves many responsibilities (some of the hardest – forming and counselling students). A physical education teacher's activity is special and different from that of the other teachers. This teacher provides freedom of movement to students and teaches them to play in a team. Starting from the age particularities of students, from their motor possibilities and every student's personality, also considering the affinities when interacting with the others, a teacher may make up a group where performance is possible (Gutierrez et al., 2016).

The research objectives focused on: 1) identifying the types and meanings of the relations between the group members (relations of acceptance, rejection, indifference) and 2) identifying gender influences on the dynamics of the relations between the members of the targeted group.

As a working hypothesis, we propose to determine potential gender and age difference in the acceptance and rejection relations between the members of the targeted group.

Material and methods

The sample of subjects included 28 students of the 5th-8th grades within a Romanian rural middle school, in Iași County (north-east of the country). They make up the representative handball school team. Because this school has a reduced number of students, the group is heterogeneous, including children of both genders (14 boys and 14 girls), of different ages, between 11 and 14 years old (8 students (5 b and 3 g – 28.57%) are 14 years old, 11 students (5 b and 6 g – 39.29%) are 13 years old, 7 students (3 b and 5 g – 25%) are 12 years old, while 2 students (1 b and 1 g – 7.14%) are 11 years old. The mean group age is 12.89 years old (13 years old for boys and 13.64 years old for girls).

The research place and procedure

We carried out the research study throughout the academic year 2019-2020. We applied the designed tool in February 2020, in a classroom, immediately after the finalisation of a practice. We obtained the participation consent from both the school administration and students and their parents; then, the subjects filled out the sociometric test. Each student filled out the questionnaire; they received support in understanding the instructions (e.g., when expressing their choices, to write down only the initials of the persons selected and/or rejected). We asked the subjects to rank their choices, and we categorised all answers. We introduced the information in the *GroupDynamics, Inc*. software database. Thus, we were able to present and analyse them.

Moreno (1941, 1960) introduced sociometry in group dynamics analysis by investigating the nature, configuration and intensity of interpersonal relations within a group and the phenomena emerging based on them: communication, collaboration, influence, etc (Vajarim, 2012). Several studies have used this tool in the field of education (Bansal, 2014,;Waluyo et al., 2019) and group formation (Gutierrez et al., 2016; Parker et al., 2020), identifying the influence of variables (such as, gender, age, type of activity, etc.) on sociometric status and social

acceptance, academic self of group members (English, 2017, Underwood, 1959), social intelligence (Lozovina et al., 2014), participation in the group to obtain performance (Lucius & Kuhnert, 1996), self-perception (Ingles et al., 2017) and group perception towards a member (Bahar, 2010; Bakkaloglu, 2010; Cannon, 1954); group cohesion (Barile et al., 2016).

Studies related to sociometric status in sports groups identify influences on the psychosocial climate among group members (hierarchy, group perception of a particular member - acceptance / rejection among teammates, leader / captain) (Vierimaa & Cote, 2016, Ungureanu-Dobre, 2017), on group cohesion (Sopa, 2014; Tohănean et al., 2011), participation in sports (Gadzic & Vuckovic, 2009), obtaining group performance (Lucius, 1997), in formal environments of influence (Vojvodic & Jovanovic, 2014) and informal (Erickson & Cote, 2016).

The sociometric test included several questions concerning the students' options related to collaboration with their classmates in highly diverse situations. The questions are grouped into pairs, and each concern the same situations for which they have to express choices and rejections. In the first part, we collected identification data: initials of the first and last name, age, gender, school, sport practised. In the second part, we formulated six questions: three of them concerned the listing in order of three names of colleagues selected, rejected and indifferent, as well as three other questions concerning potential choices, rejections and indifferent positions of one's person by three colleagues in the activities to the school's representative handball team.

The data obtained after applying the designed sociometric test were processed using the software *GroupDynamics – rev.1.0*. The female subjects are represented by pink, while the males by blue. The distribution of subjects is illustrated by a sociogram, within the concentric circles delimiting the social status areas, as follows. Area A – "Popular", area B – "Liked more than disliked", area C – "Disliked more than liked", area D – "Controversial", area E – "Rejected", area F – "Neglected". The sociogram is the Graph developed by the software featuring the choices among subjects. Each choice represents an arrow connecting the "source"-subject (the one who made it) with the "target"-subject (the one selected). The choice is mutual when two students choose each other. The subjects may be moved around in the Graph to allow the extraction of connections. The green arrows show the positive choices, while the red arrows – the negative choices (rejection). The thicker line represents the first choice, the thinner line – the second choice, the dotted line – the third option, while the arrow indicates direction – from whom to whom.

Results

The first question of the test (*If you were to choose, whom would you prefer as teammates in the school's representative team? List, in order, 3.*) concerned the expression of the subjects' preferences in the positive choices of the other colleagues for activities within the representative team.

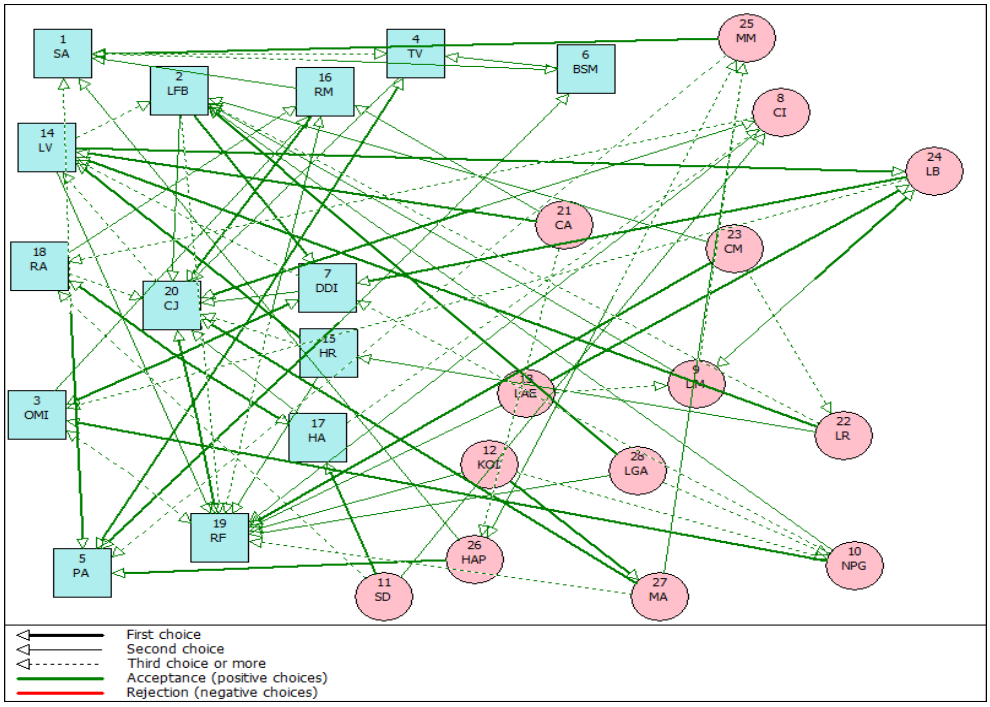

Figure 1. Diagram of positive choices of subjects for the first question of the test

Figure 1 shows that the first options in the positive choices of the subjects, regardless of their gender, concerned mostly the male subjects, most of them CJ and PA (4 each), while LB (female) received most of them, namely 3. The male subjects oriented their first positive choices mostly towards those of the same gender. Only one boy – LV – chose a girl first, LB. Most girls had mainly boys as their first choice; in a few cases, they preferred female colleagues (LB and MA). Most positive choices – regardless of the option (the first, the second, the third) – were received by the subject CJ, male.

The second question concerned the identification of preferences for the rejection of the subjects (*List, in the order of preference, 3 of the colleagues you would not want in the school's representative team.*). The results show that the

first rejection option tends to regard the other gender, boys towards girls and girls towards boys (see Fig. 2). It does not mean that there were no rejections as first options within the same gender. Most first rejection options were received by KOI, a female subject: 4 from boys and one from girls. In addition, HR, a male subject, received 3 first rejection options from boys and one from girls. On the contrary, LFB – a male subject – received 3 first rejection options from the girls. SD and CI – both girls – received 2 rejection options from the boys.

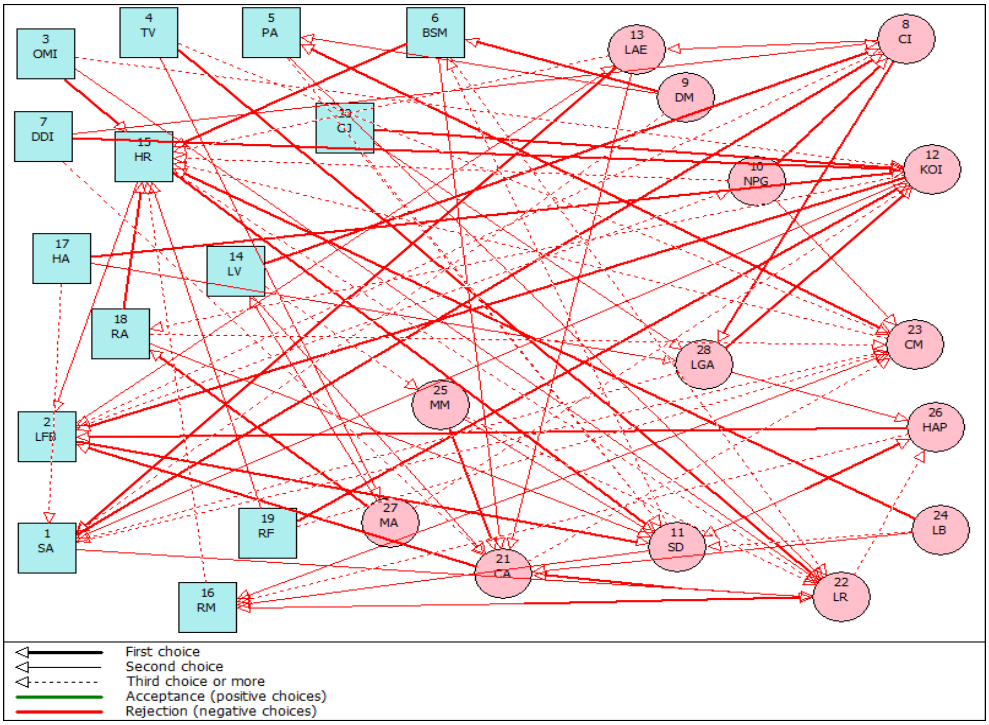

Figure 2. Diagram of subject rejections for the second test question

The third question – also concerning acceptance (*Who of your colleagues do you believe prefer to attend school sports competitions with you?*) – sought to identify the potential choices made by the colleagues concerning the subject. Figure 3 shows that the dominant preferences come from subjects of the same gender. LB (a female subject) received most of the possible choices as a first option (3) from subjects of the same gender, while the male subject LV also received three from boys. In addition, the Graph shows several first positive choices from the girls towards the boys (HAP towards BSM, MA towards RF) and only one from the boys towards the girls (RM towards MA).

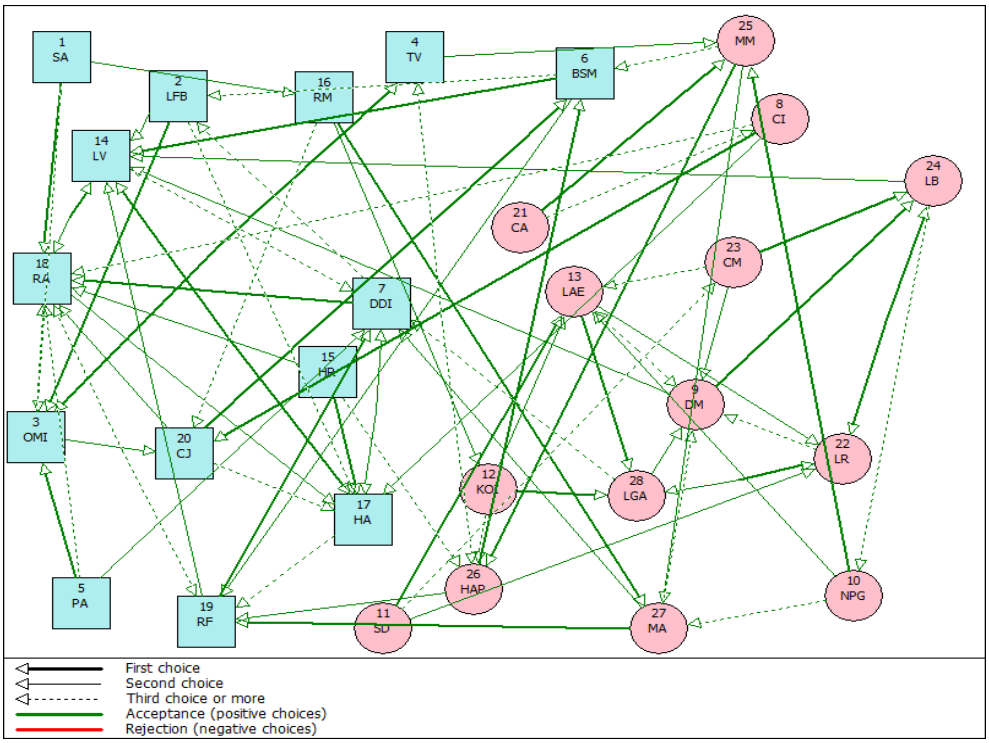

Figure 3. Diagram of positive choices of subjects for the third question of the test

Question 4 (*Choose 3 colleagues, in order, who do not prefer you.)* sought to identify the negative preferences towards the subject filling out the test (see Fig. 4). The results obtained highlight the following aspects: two female subjects (NPG) and two male subjects (DDI and RF) did not receive any rejection from the other colleagues. By corroborating the information in the sociogram, three of them (NPG, DDI and LB) are part of the central area of the popular subjects (i.e., of the leaders). Several subjects received 3 first rejection options each from the others (from both genders), but it is worth noting that rejection also came from the other gender. Hence, the male subjects CJ and BSM received 3 first rejection options each (2 from girls and one from boys). At the same time, TV (a boy) also received 3 first rejection options, but 2 are from boys and one from girls. Several female subjects – CI, HAP and SD – received a first rejection option each from boys and one each from girls.

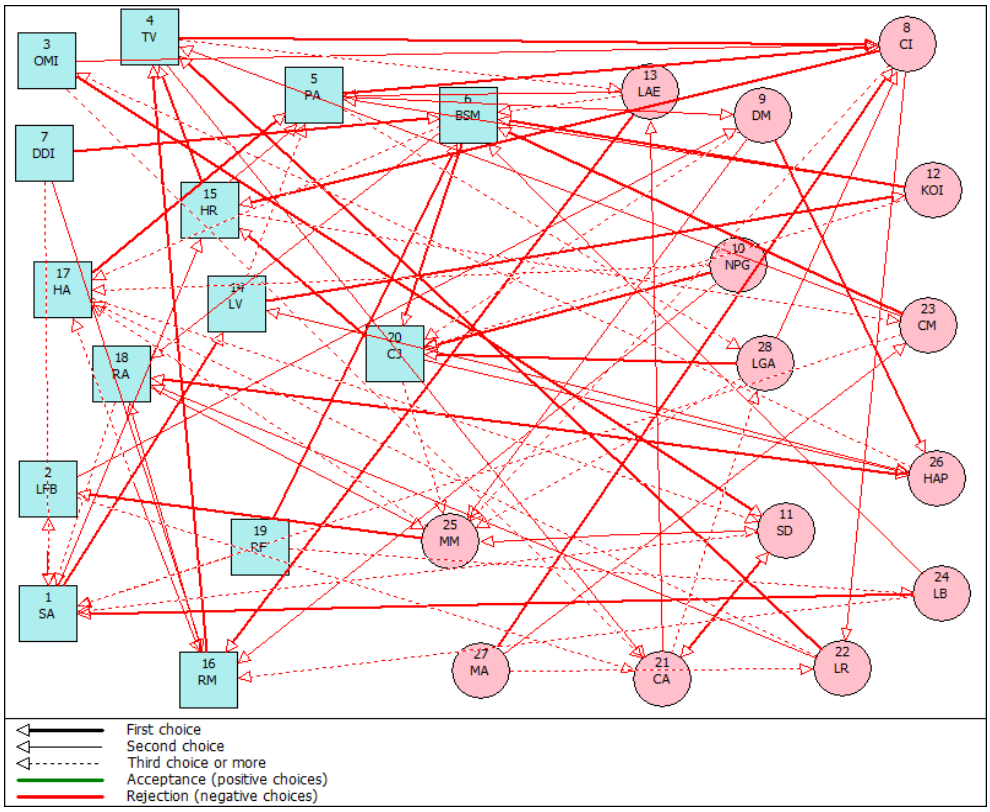

Figure 4. Diagram of subjects' rejections for the fourth question of the test

Question five of the test sought to identify the subjects' degree of indifference towards the other colleagues (*List 3 colleagues who are indifferent to you in what concerns the team members.*). Figure 5 illustrates that the first options in choices focus on the opposite gender. For instance, NPG – a female subject – received 4 first options from boys and one from a girl. In addition, DDI and TV – male subjects – received 3 first options from girls each. The same Graph shows that CM and KOI – female subjects – did not receive any choice from the other group members.

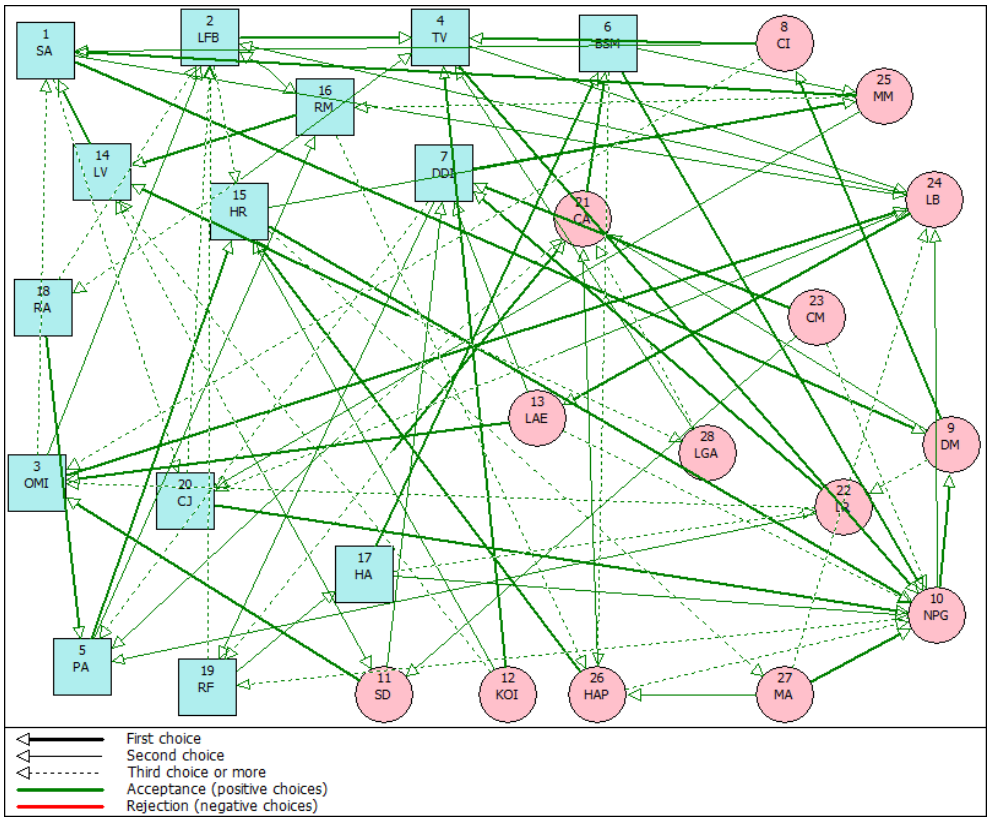

Figure 5. Diagram of the subjects' choices for the fifth question of the test

For question 6 (*List 3 colleagues, in order, to whom you think you are indifferent.*) none of the subjects – regardless of their gender – received more than two first choices (see Fig. 6). These data may be explained by the fact that the group subjects care for one another; hence, they find it difficult to point out a degree of indifference. These data are backed up by the absence of subjects in areas E "Rejected" and F – "Neglected".

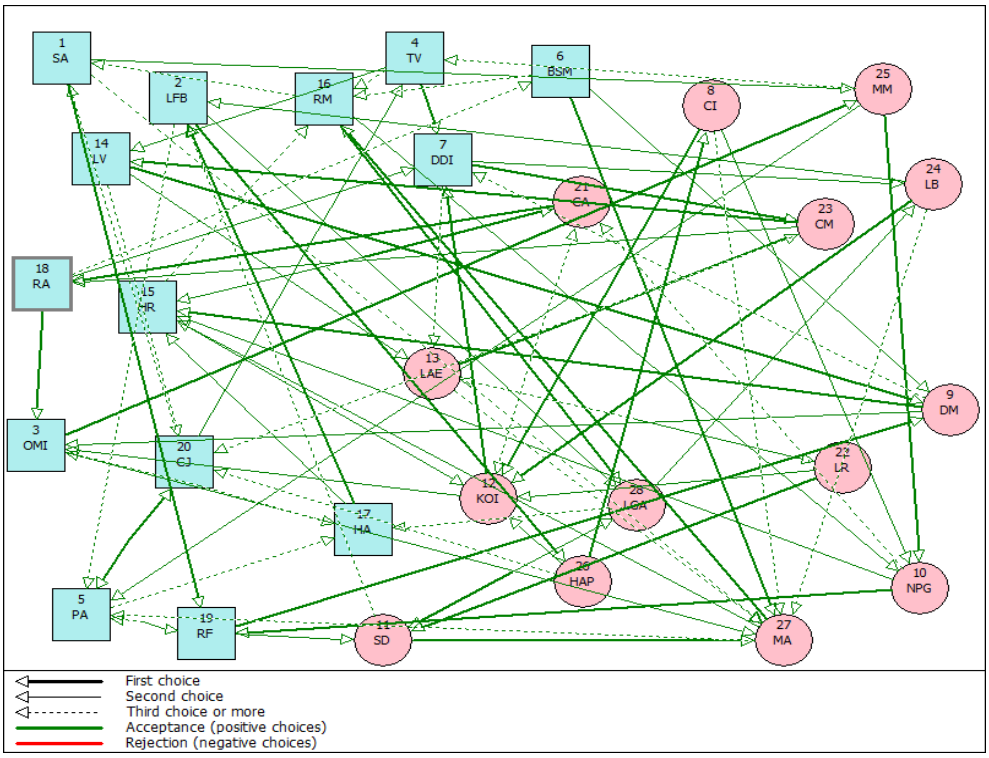

Figure 6. Diagram of the subjects' choices for the sixth question of the test

Discussion

Figure 7 illustrates that the male subjects received more positive choices than rejections compared to the female subjects. The highest number of positive choices obtained by a girl is 15 (NPG), while by a boy is 23 (RF), which makes them the most popular within the group.

Only two of the research subjects (DDI and RF), both male, received only positive choices – RF received the most choices (23), while DDI had 18 choices. Among the male subjects, too, a relatively significant number of the positive choices concerned CJ (20 choices), LV (18 choices, just like DDI), but they also received rejections: LV – 3 rejections, while CJ – 5 rejections.

Among the female subjects, the highest number of positive choices concerned NPG (15), who also recorded a rejection. In addition, LB (who received 14 positive choices) had a rejection just like MA (with 12 positive choices).

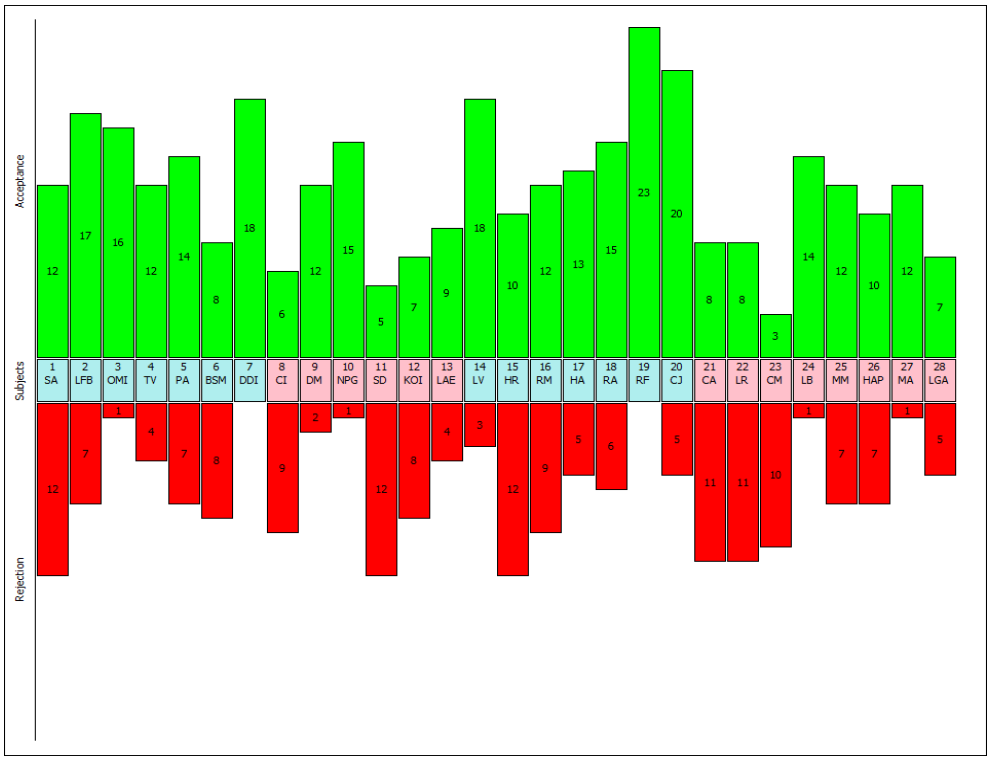

Figure 7. Types of choices (positive and negative) of research subjects

A girl (CM) recorded the lowest number of positive choices – 3, while the lowest number recorded by boys, namely by BSM, is 8 (he had the same number of rejections). Most rejections – 12 – were recorded by 2 boys and a girl. One of the boys (SA) received the same number of positive choices and rejections.

It is worth noting that the subjects RF and DDI – who received most of the acceptance choices and no rejection – are part of the 13-14 years old category (they are older, thus the group leaders).

The resulting sociogram (fig. 8) highlights 5 subjects (3 boys and 2 girls) as popular at the level of the sample group (RF, DDI, OMI, and NPG and LB, respectively), aged 13 years old except for one boy – DDI – who is 14 years old. Interestingly, none of the subjects are in areas E – "Rejected" and F – "Neglected". These aspects may be explained by the fact that the students know each other, participate in activities. Hence, they know each other and accept each other enough to avoid being excluded from the group.

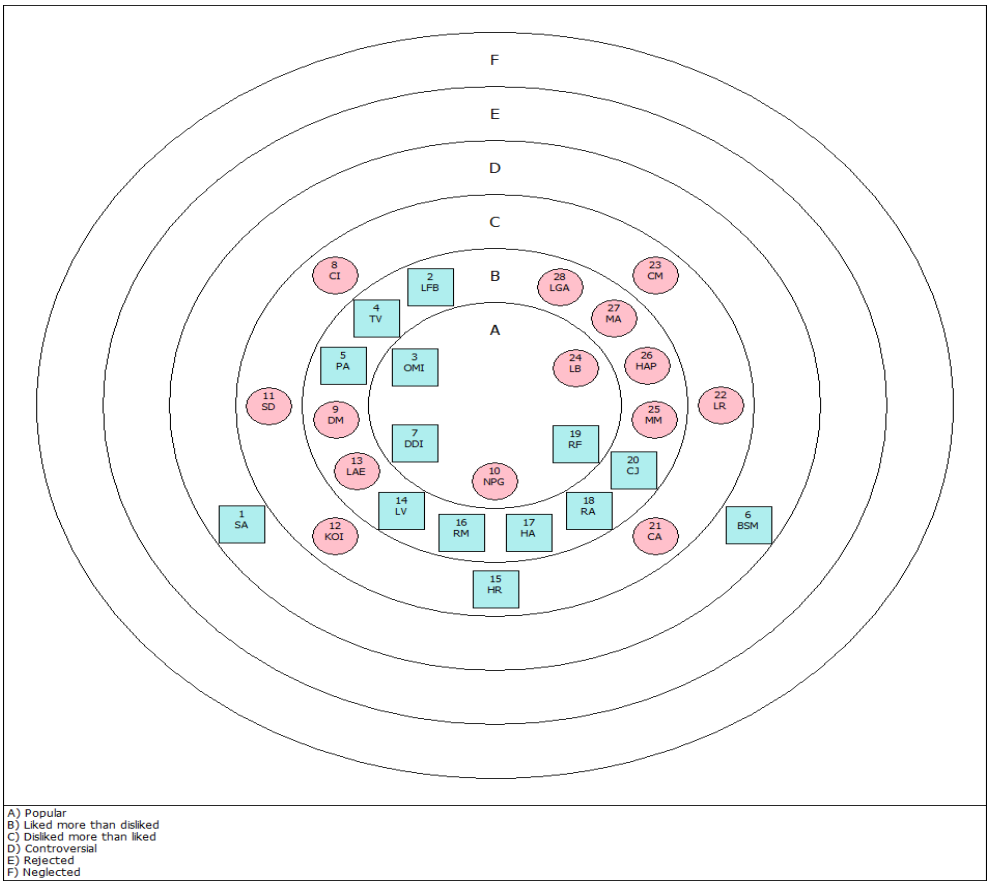

Figure 8. Sociogram of the group of subjects

Most subjects are in area B, "Liked more than disliked", 14 (8 are boys and 6 girls). The group members within this area are part of the age category 12-14 years old. In the case of boys, 2 are 12 years old, 3 are 13 years old and 2 are 14 years old. In the case of girls, one is 12 years old, two are 13 years old and 3 are 14 years old. Consequently, some of the new students selected at the beginning of the school year managed to develop positive relations with the "old" group members.

Area C ("Disliked more than liked") includes 7 subjects, 1 boy and 6 girls. It is worth noting that all those in this area are part of the younger age category: the boy is 11 years old, while the girls between 11 and 13 years old (one is 11 years old, 4 are 12 years old, and another one is 13 years old).

Results do not seem to be fortuitous in this area because – given that the team is in its beginning stages – group composition highlights that the younger students had been selected at the beginning of the school year to take part in the activities of the representative team and they did not all manage to be acknowledged and considered by the other group members.

Area D – "Controversial" comprises only two male subjects (both aged 14 years old). Hence, RF, DDI and OMI (male subjects) and LB and NPG (female subjects) received most of the first positive choices (see Fig. 9). In what concerns the rejections, most of the first negative options regarded KOI (female) – 5, while HR and SA (male) received 5 each (see Fig. 10).

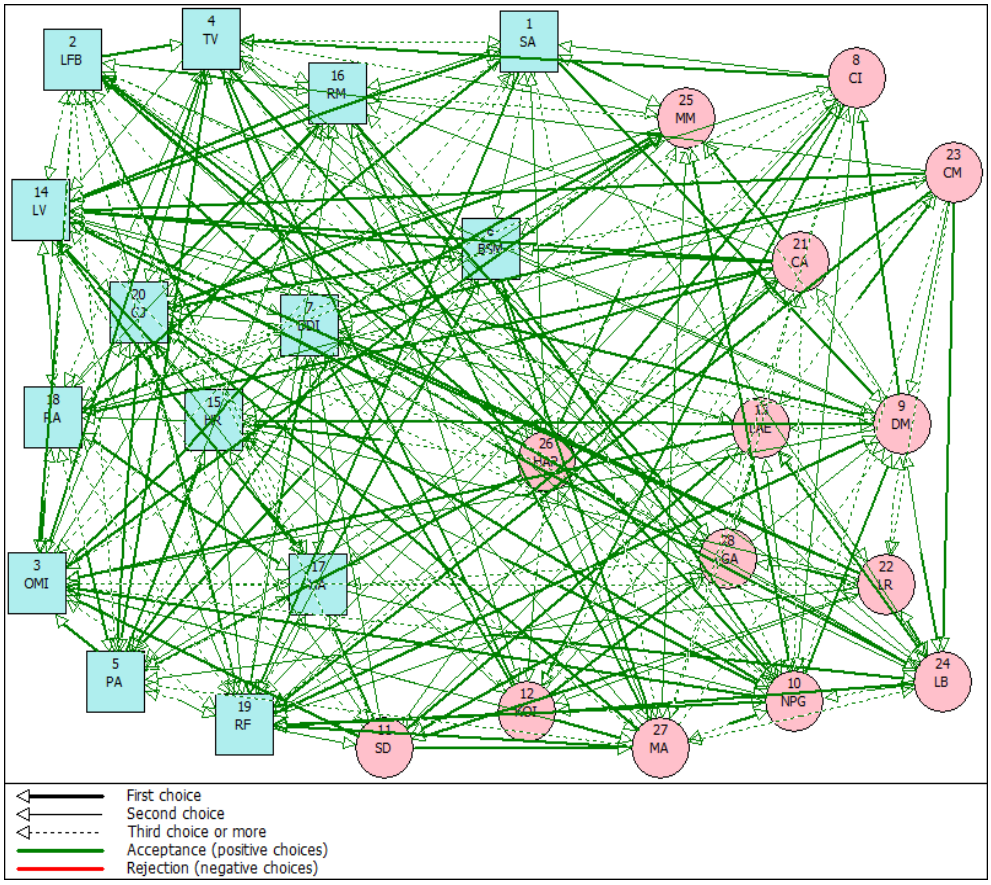

Figure 9. Diagram of the types of positive choices made by research subjects

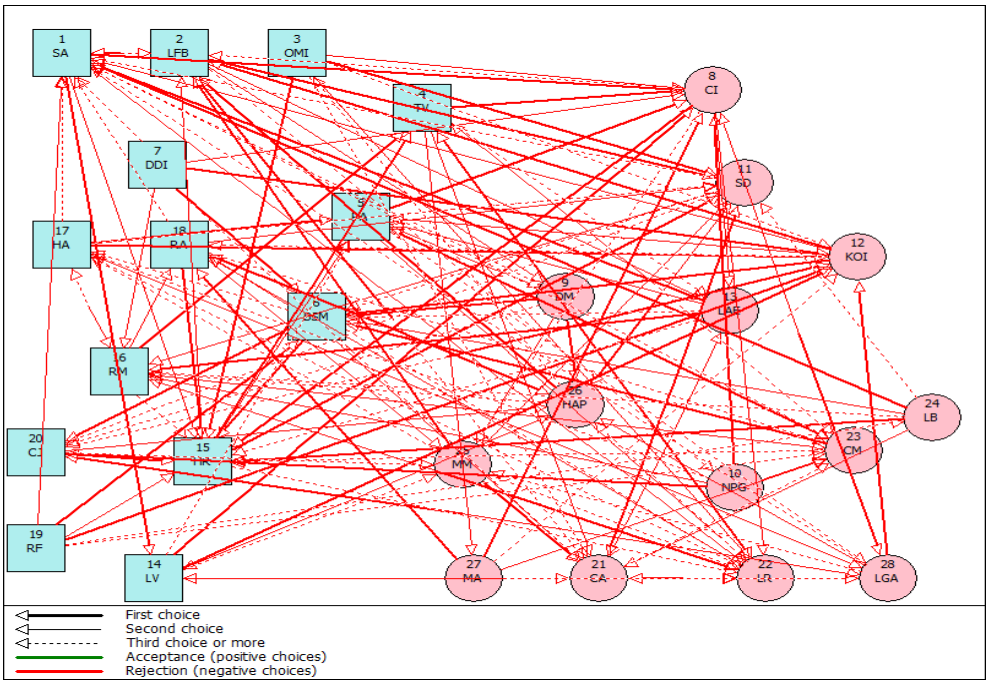

Figure 10. Diagram of the types of positive choices made by research subjects

Conclusions

This study was pilot research aiming to get a better insight into the dynamics of relations within a Romanian representative rural handball team. To this end, we used a software called *GroupDynamics*, *Inc.*, which allowed me to conduct the data input through sociometric designed in a database and then to process the data.

Thus, we formulate below a series of conclusions in conformity with the results obtained:

The male subjects received more positive choices than rejections compared to the female subjects. These data may correspond to the sociocultural model specific to the Romanian area. It is a cultural-traditional society where values are conveyed to the new generation, all the more in the rural areas.

Only two of the research subjects – both male – received only positive choices. They belong to the 13-14 years old category. In their turn, two girls obtained many positive choices, but they also received a rejection, and their

score was lower than the one of the boys. Team seniority (the presence of subjects within the group several years in a row) may represent an independent variable influencing these positive preferences.

The distribution of the subjects by social status areas highlighted that at group level, area A "Popular" comprised 5 subjects (3 boys and 2 girls) as popular at the level of the sample group. Except for one of the boys, who is 14 years old, all the other leaders are 13 years old. Subjects gain their popularity by highlighting their qualities, given that sports activity is vocational. Hence, besides the relations, communication and encouraging skills, the handball-specific technical and tactical skills may have played a role, too, in the positive preferences for both genders. If we also consider the first options in the positive and the negative choices, depending on gender, we may draw the following conclusions:

- None of the subjects are in areas E – "Rejected" and F – "Neglected". The subjects know each other, they partake in activities together, which may explain this aspect.
- Most subjects are in area B – "Liked more than disliked", namely 14 (8 are boys and 6 girls). Their ages (11 to 14 years old) show that some of the younger members (aged 11-12) were accepted by the others or that they managed to integrate faster than the others. Hence, individualised acceptance depends on the personality, qualities and sports skills specific to each student.
- Area C – "Disliked more than liked" includes 7 subjects (1 boy and 6 girls). It is worth noting that all of them are younger students: the boy is 11 years old, while the girls between 11 and 13 years old (one is 11 years old, 4 are 12 years old, and another one is 13 years old).
- Area D – "Controversial" comprises only subjects, both male, both with the age category of 14 years old. The common experiences and deeper affective relations between the members with greater seniority in the team may have led to the inclusion of the two older subjects in the neutral area.
- The male subjects oriented their first positive choices mostly towards those of the same gender. Most of the girls had mostly boys as their first choice (in some cases, they chose the leader female colleagues).
- The first rejection option focuses on the other gender: boys towards girls and girls towards boys. Of course, there are also rejections as first options within the same gender.

  Given the results, it may be stated that *the hypothesis was confirmed*.

By analysing the situation of each subject, we can provide relevant information for each teacher or coach (Physical Education Teacher), thus creating a premise in the teaching endeavour to obtain performance with the group they coordinate. Such information may be used in the following directions:

- The organisation and course of practice lessons, the choice of various exercises, especially in pairs or groups, depending on the affinities between subjects (group members). Organising activities and games where students of both genders (their seniority, qualities and sports skills) may interact can entail group performance and improve it. In addition, rotating and changing partners may provide a chance of interacting more often with each other.
- The choice of specialised positions (it is known that in handball, like in any other collective sport, the choice of a player for a position must rely on their relations with the other, besides their physical and technical/tactical qualities). Though it may seem relatively too early, one may choose the position of players even at this stage.
- The choice of a defence or attack tactical strategy considering understanding, communication, cooperation and mutual help between players in different situations. During training sessions, one may practice various technical and tactical combinations, taking into account the socio-affective relations between the group members.
- The choice of strategies to attract the subjects in the "neutral" area, for them to develop positive relations by using "bridge" subjects. The last students can connect those at the periphery of the group and the leaders, or those who do not like each other, but like the same subjects.
- The choice of strategies to highlight students who are shier or more introverted, to integrate them in the group, by empowering them and increasing their self-esteem.
- Possible strategies in partnership with the parents, to facilitate the connections between children who reject or ignore each other at the level of the team.

This study has a series of limits. The sociometric test makes it possible to photograph the structure and position of individuals within the group as it is recorded at a certain point, but it does not show the causes, nature, subsequent evolution of group relations. It would be relevant to correlate the data obtained by the sociometric test with those obtained through other methods. In addition, we have not found any studies on rural subjects.

Several future research directions provide us with the possibility of getting a deeper insight into the topic. By considering other independent variables (team seniority, positions, first-team or substitute player, etc.) and by making comparisons with other sports groups (from various school settings, sports branches or rankings), new information becomes available regarding the dynamic of relations between the members of a sports group.

REFERENCES

Arrow, H., McGrath, J.E. & Berdahl, J.L. (2000). *Small groups as a complex systems: formation, coordination, development, and adaptation*. Sage Publications.

Bahar, H.H. (2010). The effects of gender, perceived social support and sociometric status on academic success. *J. Procedia Social and Behavioral,* 2, 3801-380.

Bakkaloglu, H. (2010). A comparison of the loneliness levels of mainstreamed primary students according to their sociometric status. *J. Procedia Social and behavioral,* 2, 330-336.

Bansal, S. (2014). Sociometry a conceptual introduction. *J. International Journal of Education and Science Research REVIEW,* 1(05), 147-153.

Barile, S., Riolli, L. & Hysa, X. (2016). Modelling and Measuring Group Cohesiveness with Consonance: Intertwining the Sociometric Test with the Picture Apperception Value Test. *Systems Research and Behavioral Scienc*e, John Wiley & Sons, Ltd.

Cannon, K.L. (1954). Sociometric scores among high school students and their relationships to selected variables of family living, *Retrospective Theses and Dissertations*. 14224, https://lib.dr.iastate.edu/rtd/14224.

Carron, A.V. & Hausenblas, H.A. (1998). *Group Dynamics in sport*, second edition. Book Crafters, USA.

Erickson, K. & Côté J. (2016). An Exploratory Examination of Interpersonal Interactions between Peers in Informal Sport Play Contexts. *PLoS ONE* 11(5): e0154275. doi:10.1371/journal.pone.0154275.

Gadžić, A. & Vučković, I. (2009). Participation in sports and sociometric status of adolescents. *Biomedical Human Kinetics*, 1, 83 – 85. DOI: 10.2478/v10101-009-0021-y.

Gutierrez, J.H., Astudillo, C.A., Perez, P.B., Melia, D.M. & Vejar, A.C. (2016). The multiple team formation problem using sociometry. *J. Computers & Operations Research*, 75, 150-162.

Inglés, C.J., Aparisi, D., Delgado, B., Torregrosa, M.S. & García-Fernández, J.M. (2017). Sociometric types and academic self-concept in adolescents. *Psicothema,* 29(4), 496-50. doi: 10.7334/psicothema2016.54.

Lozovina, M., Bonacin, D. & Lozovina, V. (2012). Emotional intelligence and determination of sociometric status in sport. *Sport Science*, 5(2), 66-74.

Lucius, R.H. & Kuhnert, K.W. (1996). Using sociometry to predict team performance in the work place. *The Journal of Psychology*, 131(1), 21-32.

Moreno J.L. (1960). *The Sociometry Reader.* Glencoe Illinois: The Free Press.

Moreno, J.L. (1941). Foundations of Sociometry: An Introduction. *Sociometry*, 4(1), 15-35, Published by: American Sociological Association Stable URL: http://www.jstor.org/stable/2785363 Accessed: 27/10/2010 16:18.

Neculau, A. (1981). *Grupul – mediu și mijloc de formare psihosocială*. Viitorul social.

Neculau, A. (1983). *A fi elev*. Bucharest: Albatros.

Neculau, A. (coord.) (2003). *Manual de psihologie socială*. Iasi: Polirom.

Neculau, A. (2007). *Dinamica grupului și a echipei*. Iasi: Polirom.

Parker, J.N., Cardenas, E., Dorr, A.N. & Hackett, E.J. (2020). Using Sociometers to Advance Small Group Research. *Sociological Methods & Research*, 49(4), 1064-1102. DOI: 10.1177/0049124118769091.

Rusu, O. (2012). *Psiho-sociologia grupurilor sportive. O introducere*, Iasi:Tehnopress.

Sopa, I.S., Sanislav, M. & Pomohaci, M. (2014). The Importance and Utility of the Sociometric Survey Method in Physical Education Research. *Procedia - Social and Behavioral Sciences*, 117, 185 – 192.

Tohănean, D.I., Chicomban, M. & Drugău, S. (2011). Socializing students in physical education and sports activities. *Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH*, XI(2), Supplement, 638-644.

Underwood, P.H. (1959). A comparison of two sociometric tests, designed to measure the social value of individuals in groups of preschool children, master thesis. Oklahoma State University.

Ungureanu–Dobre, A. (2017). Organizing the women's football team according to the inter-individual preferences of its members. *Journal of Sport and Kinetic Movement*, II(30), 82-88.

Vajarim M,R. (2012). What is sociometry and how we can apply it in our life? *J. Advances in* Asian Social Science (AASS), 2(04), 570-573.

Vierimaa, M. & Côté J. (2016). An exploration of sociometric status and peer relations in youth sports. *Journal of Sport Behavior*, 39(1), 72-91.

Vojvodić, M. & Jovanović, M. (2014). Sociometric structure of premier league volleyball club. *SportLogia*, 10(2), 96–105. doi: 10.5550/sgia.141002.en.006V.

Waluyo, E., Djeni, D., Pratama, L.D. & Anggraini, V.A. (2019). Clustering based on sociometry in Pythagoras theorem. *IOP Conf. Series: Journal of Physics: Conf. Series 1211*, 012058 IOP Publishing, doi:10.1088/1742-6596/1211/1/012058.