GROUP COHESION IMPORTANT FACTOR IN SPORT PERFORMANCE

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Abstract
      Group cohesion is becoming more and more important in any activities were performance is the main purpose. In group sports, like in any other performance based activities, high group cohesion is considered to be very helpful, and has led to better performance. The cohesiveness of sports group mostly refers to the strength of bonds between group members, the unity of a group, the feeling of attraction between group members, and the degree to which members concentrate their efforts to achieve group goals. Therefore, from ascertaining that in groups where there are positive relationships of sympathy, friendship and cooperation, the activity is most effective. Thus, we had tried in this study to analyze and develop cohesion in a sport group.

 The purpose of this study is to know how group cohesion can influence team performance, how positive attraction relationships can lead to better performance and mostly, how we can reintegrate the marginalized members in the group using sport activities.

Using the observation method, the survey method and the social metric test, we analyzed the cohesion index of a sport group. In addition, we studied the preferential relationships of election and rejection; and we tried to find ways to reintegrate the marginalized subjects in the social group.

Keywords: Group Cohesion, sport performance, socialization

Introduction
      Nowadays, sport activities are more and more demanding and performance based. The sport group's theory has developed, and most researchers think that a group with high cohesion is more likely to be united and committed to success than a group with low cohesion (Jarvis, 2006).

Group cohesion can be described as the strength of bounds between group members, the unity of a group, the feeling of attraction between group members, and the degree to which members concentrate their efforts to achieve group goals. Therefore, we believe this definition given fits best: group cohesion is a dynamic process that is reflected in the tendency for a group to stick together and remain united in its pursuit of instrumental objectives and/or for the satisfaction of members affective needs (Carron et. Al., 1998).

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Being a dynamic process, group cohesion has the characteristic that group tends to remain together and united in the pursuit of its goal for the satisfaction of the affective needs of group members (Paskevich et. Al., 2001).

Having a high group cohesion is considered to be important and would lead to a better performance. The relation between cohesion and performance was studied by many researchers; and most concluded that "the connection between cohesion and performance is reciprocal". Hence, high cohesion increases the group's performance while successful performance increases cohesion. However, both task and social cohesion are related to group performance (Carron et. Al., 2002).

Team cohesion exists where players are united with a common purpose (Cashmore, 2002). Members of the group spend time and share common interests outside the group activity, which signifies that the group has a good social cohesion. Task cohesion is referring to a group united to accomplish a specific task (Williamson, 2007). This definition focus on two important concepts of task and social cohesion. Thus, as a group is usually formatted to obtain and fulfill a purpose, task cohesion plays an important role in the functionality of every group. Another cohesive force which often develops over time was that of social cohesion among the group members (Rovio et. Al., 2009). Task cohesion or group integration is an indication of how well the team operates as a working unit, while social cohesion or individual attraction refers to how well team members like each other as well as the team's identity (Lavallee, Kremer, Moran & Williams, 2004). Research has shown that a high level of task cohesion is also linked to perceived psychological momentum (Eisler and Spink, 1998).

Purpose

Our study started from the idea that in groups, there we can find positive relationships of sympathy, friendship, and cooperation. Therefore, the activity is most effective and the results are better. So the purpose of the study was to find out using the social metric test, the relationships between

members of our group, the attractions, the rejections, the leader of the group and also the marginalized individuals so that we can help them reintegrate into the main group and have a better cohesion and a better results.

Methods of research

We used the observation method as the method of research in this study; and to understand different aspects of interaction within the groups investigated, we used the social metric test. The observation method is one of the methods most commonly used for psychosocial research. It can be applied, organized relatively easily, quickly adapted and used in various situations for analyzing the evolution of groups. It can also be used in varied forms depending not only on the objective of the investigation, but as well as the nature of the group. With this method, we can follow and record behavioral manifestations in various social situations, individually or psychosocial interactions as the psychological analysis of the whole group or a particular individual.

Observation combined with various discussions with the team has helped us in acquiring information on existing relations in the group, affective communication between students, group decision making, resolving various disputes regarding the group, the degree of socialization, communication and effects of team sports on the child's behavior.

In the present study, we also used the social metric test hoping to find the connections within a volleyball team with 12 players age between 8-9, and how socialization through sport can help in building group cohesion, establishing the sympathetic relations and mutual choice or rejection between students. These relationships can reveal our group dynamics, structure and hierarchy of students in this sport group. However, after analyzing those factors, we can determine the group leader, the marginalized individuals, group cohesion and the status of each member in the team.

The purpose of this test was to determine the social metric place for each student in the group, attractions and rejections within the group, interpersonal relations that were established within the group, and its cohesion.

The Social metric test consisted of four questions, and students were asked to express their attraction or repulsion for their colleagues. For each question, students were required to nominate three peers in order of preference, thereby testing and virtually forcing students to reveal certain emotional states.

Preceded by the instructions for the administration of the test and the purpose, the importance and the need of the sincerity of the answers and discretion, together with the social metric test was structured into two criteria:

The criterion of cooperation during activities:

A (+) With which of your team colleagues you socialize and cooperate better during trainings?

B (-) With which of your team colleagues you socialize and cooperate less during trainings?

The criterion of leisure time activities:

C (+) With which of your classmates would you like to spend your free time?

D (-) With which of your classmates would you like to spend less free time?

We applied the socio-metric method on our research group with students aged between 8-9, and we tried to respect the conditions and steps for a correct test administration (Chelcea, 1975). The first step is to ensure that group members know each other very well so that they will be able to express their real preferences, and not randomly. Also, our students had some socialization sessions and background introduction, and we insure that their honest answers will not be revealed to colleagues. In addition, we insure that their preferences will be expressed hierarchically.

The social metric test indicators are: Value of I_{ss} and I_{sp} (Chelcea et Al., 1993) are information about how to classify individuals according to how they are accepted, rejected or isolated in the group:

- Social status index of A:
$$I_{ss} = \frac{N(A)}{N-1} = \frac{\sum (A)}{N-1} \qquad (1)$$

- Preferential status index of A:
$$I_{SP} = \frac{\sum A - \sum R}{N-1} \qquad (2)$$

- Group cohesion index:
$$I_{eaf} = \frac{N_S(A)}{N-1} \qquad (3)$$

- Coefficient of group cohesion:
$$C_C = \frac{2 * \sum A_R}{N(N-1)} \qquad (4)$$

- Group cohesion index:
$$I_C = \frac{2 * (\sum A_R - \sum R_R)}{N(N-1)} \qquad (5)$$

Then, we had to process the social metric questionnaire responses and make the social metric matrix based on the summary table. In this table, we passed the subjects, the cast elections and their preferred order, scored points and rank classification. Based on the data from the social metric matrix, the indicators remembered are calculated and so we formed the social-gram.

The social-gram was composed by placing the subject that meets the highest number of points (with the highest index of social status) in the center of concentric circles.

The method that we applied has the character of a collective inquiry, and the subjects' answers (students, athletes) consisting of the hierarchy of the colleagues follows the proper lieder criteria (Chelcea, 2005).

Research results

The next step of our research was to centralize our student's responses and build up the social matrix. In Table 1, we passed the subjects with their initials in the first column and gave them a number in order, and then we noted their preferences. In Table 2, we build up the social matrix that reflects all the rejections and elections in a matrix table.

The criterion of cooperation during activities:

A (+) With which of your team colleagues you socialize and cooperate better during trainings?

B (-) With which of your team colleagues you socialize and cooperate less during trainings?

Subjects	+3	+2	+1	-1	-2	-3
BA (1)	3	6	8	4	11	10
BM (2)	7	11	12	5	4	10
CA (3)	1	7	8	10	11	4
CM (4)	7	1	10	8	9	12
DA (5)	6	4	7	1	10	9
ID (6)	1	11	5	8	10	12
IS (7)	2	11	12	1	4	10
NA (8)	1	3	7	9	10	12
SA (9)	7	2	11	5	4	10
SC (10)	12	11	4	2	3	1
SE (11)	7	12	2	8	1	10
VA (12)	7	2	11	1	5	4

Table 1. Elections and rejections cast table for criterion A (+) and B (-)

The first step in analyzing the results of the social metric test was by drawing the table of election and rejections for criterion A (+) and B (-) (Table 1). As we can see in the first column, we arranged the subjects in alphabetical order, and each one of them received a number in parentheses. On the first row, we have students' choices of electives (+3, +2, +1) and rejections (-1, -2, -3) depending on how each one of them had chosen. So for example, subject BA (1) had chosen for subject CA (3), ID (6) and NA (8) for colleagues with which he socializes and cooperate better in trainings and rejected subject CM (4), SE (11) and SC (10).

Sub.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1			+3	-1		+2		+1		-3	-2	
2				-2	-1		+3			-3	+2	+1
3	+3			-3			+2	+1		-1	-2	
4	+2						+3	-1	-2	+1		-3
5	-1			+2		+3	+1		-3	-2		
6	+3				+1			-1		-2	+2	-3
7	-1	+3		-2						-3	+2	+1
8	+3		+2				+1		-1	-2		-3
9		+2		-2	-1		+3			-3	+1	
10	-3	-1	-2	+1							+2	+3
11	-2	+1					+3	-1		-3		+2
12	-1	+2		-3	-2		+3				+1	

Table 2. Social matrix for criterion A (+) and B (-)

The second step was drawing the Socio-matrix for criterion A (+) and B (-) (Table 2) which is a graphical version of the first table, showing us the elections and rejections of each student. On the first row and first column from the left, we have the numbers of each subject starting from 1 to 12.

Subjects expressed their opinions about elections and rejections having 3 options for each (+3,+2,+1 and -3, -2, -1). With green, we marked the cell where the subject could not choose. Hence, every subject cannot choose himself.

This table will help us in the next step of our analysis where we have to calculate every student indices of acceptability in the group. So for example, subject 2 has received from subject 7 +3 points, subject 9 liked him and had given +2 points, subject 10 has rejected him with -1 point, subject 11 elected him and had given +1 while subject 12 elected subject 2 and had given him +2.

Social matrix indices applied sample calculation:

Calculating indices of social status and preferential status indices:

Subject	Index of social status (I_{SS})	Index of preferential status (I_{SP})
BA (1)	4/11 = 0,36	-1/11 = -0,09
BM (2)	4/11 = 0,36	3/11 = 0,27
CA (3)	2/11 = 0,18	1/11 = 0,09
CM (4)	2/11 = 0,18	-3/11 = -0,27
DA (5)	1/11 = 0,09	-1/11 = -0,09
ID (6)	2/11 = 0,18	2/11 = 0,18
IS (7)	8/11 = 0,73	8/11 = 0,73
NA (8)	2/11 = 0,18	-1/11 = -0,09
SA (9)	0	-3/11 = -0,27
SC (10)	1/11 = 0,09	-7/11 = -0,64
SE (11)	6/11 = 0,55	4/11 = 0,36
VA (12)	4/11 = 0,36	1/11 = 0,09

Table 3. Indicators of social status and status indicators preferential for criterion A (+) and B (-)

After drawing the Table 1 with the rejections and elections on criterion A (+) and B (-) and Table 2 with the social matrix, we drew Table 3 with indicators of social status and preferential status of each student. Furthermore, we calculated the Index of social status (I_{SS}) using the formula (1). Hence, showing us the position of the individual within the group, we determined the position of each student according to the choices and rejections cast.

The results showed that subjects IS (7) obtained the highest index of social status with 0.73 being the most appreciated student. Also, other students achieved good scores as SE (11) with 0.55, and BA (1), BM (2), VA (12) with 0.36, which was chosen by many students. Students less prepared or not prepared at all by the collective but not necessarily rejected by them,

may be considered neutrals when it is DA (5), SA (9), and SC (10). Then, we calculated the preferential status index according to the formula (2).

Therefore, among the most preferred students was IS (11) with a coefficient of 0.73, being the leader and the most appreciated between the colleagues. Also, students that achieved good scores were SE (11) with 0.36, and BM (2) with 0.27. On the other hand, student SC (10) had a negative index of -0.64 with CM (4) and SA (9) with -0.27, which indicates that these students were rejected by the collective.

After analyzing the index of the social status and the index of the preferential status, we calculated other two group cohesion important indices which are: coefficient of group cohesion and group cohesion index.

Group cohesion index calculation on criterion A (+) and B (-):

$M_e =$ 12   1 – 3   1 – 8   2 – 7   2 – 11   2 – 12   3 – 8   4 – 10   5 – 6   1 – 6   7 – 11   7 – 12   11 – 12

$M_r =$ 7   1 – 11   1 – 10   2 – 10   3 – 10   4 – 9   4 – 12   5 – 9

Within this index, we extracted the mutual relations of elections and rejections on criterion A and B. Thus, we discovered a number of 12 mutual choices (I), and a number of 7 mutual rejection (M_r), which means that the group of students with whom we worked with have more mutual relations of sympathy and attraction than rejection.

Coefficient of group cohesion:
$$C_C = \frac{2 * \sum A_R}{N(N-1)} = 0,18$$
where $C_c \ \varepsilon \ [0,1]$

Group cohesion index:
$$I_C = \frac{2 * (\sum A_R - \sum R_R)}{N(N-1)} = 0,075$$
where $I_c \ \varepsilon \ [-1,1]$

After calculating the coefficient of group cohesion (0,18) and group cohesion index (0,075), we can draw the conclusion that our group has a slightly better cohesion and is a compact group.

Social-grams preparation (for criterion A and B)

Social-gram elections and expressed mutual rejection:

Type social-gram: Target

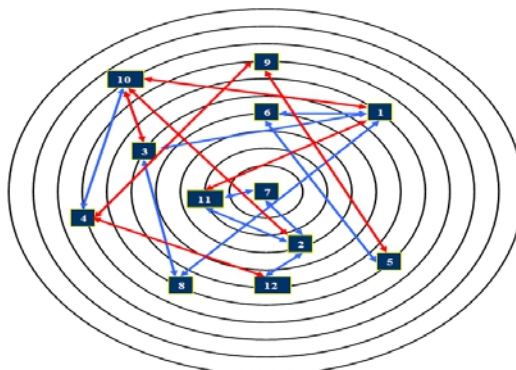Vectors used: - Reject each other   - Mutual choice

Fig. 1. Social-gram elections and mutual rejection for criterion A and B

The last step in analyzing our group cohesion for criterion A and B was drawing the social-gram of mutual elections and rejection expressed by our students. Accordingly, we placed every student on a circle (from outside to inside) based on the I_{sp} (2) formula calculated in Table 3. Thus, we could observed that student IS (7) are the most elected members of our group and was placed at the center of the social-gram.Then on the second circle, we have student SE (11) and so on until the last circle where we have the most rejected students which are student SC (10) and CM (4) and SA (9).

The criterion for leisure time activities:

C (+) With which of your classmates would you like to spend your free time?

D (-) With which of your classmates would you like to spend less free time?

Subjects	+3	+2	+1	-1	-2	-3
BA (1)	6	3	2	5	10	4
BM (2)	12	9	7	1	4	5
CA (3)	1	2	7	12	4	10
CM (4)	6	5	10	1	7	11
DA (5)	6	9	11	12	10	4
ID (6)	1	5	9	11	8	10
IS (7)	11	12	2	8	1	10
NA (8)	3	9	6	4	10	12
SA (9)	6	12	7	5	4	10
SC (10)	6	5	4	12	11	2
SE (11)	1	7	12	3	5	10
VA (12)	11	7	2	1	10	8

Table 4. Elections and rejections cast table for criterion C (+) and D (-)

Consequently, we used the same sequence for criterion C (+) and D (-) as for the first criterion A (+) and B (-), and we placed the subjects alphabetically in the first column to the left and gave them number in brackets from 1 to 12. On the first row, we placed the choices for elections (+3,+2,+1) and rejections (-3, -2, -1). Then in front of each student, we placed their choices for elections and rejections.

Sub.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1		+1	+2	-3	-1	+3				-2		
2	-1		-2	-3			+1		+2			+3
3	+3	+2		-2			+1			-3		-1
4	-1				+2	+3	-2			+1	-3	
5				-3		+3			+2	-2	+1	-1
6	+3				+2			-2	+1	-3	-1	
7	-2	+1						-1		-3	+3	+2
8			+3	-1		+1			+2	-2		-3
9				-2	-1	+3	+1			-3		+2
10		-3		+1	+2	+3					-2	-1
11	+3						+2					+1
12	-1	+1					+2	-3		-2	+3	

Table 5. Social matrix for criterion C (+) and D (-)

Also, we made the social matrix the same as the first criterion, and placed at the first column and first row the numbers of each student in the group. In addition, we marked the cell with the same number so that we could adhere to the rule of no self-elected. Then, we placed for every student, the choice they made for each variant of election (+3,+2,+1) and rejection (-3, -2, -1).

Social matrix indices applied sample calculation:

Subject	Index of social status (I_{SS})	Index of preferential status (I_{SP})
BA (1)	3/11 = 0,27	-1/11 = - 0,09
BM (2)	4/11 = 0,36	3/11 = 0,27
CA (3)	2/11 = 0,18	2/11 = 0,18
CM (4)	1/11 = 0,09	-5/11 = - 0,45
DA (5)	3/11 = 0,27	0
ID (6)	6/11 = 0,55	6/11 = 0,55
IS (7)	5/11 = 0,45	4/11 = 0,36
NA (8)	0	-3/11 = - 0,27
SA (9)	4/11 = 0,36	4/11 = 0,36
SC (10)	1/11 = 0,09	-7/11 = - 0,64
SE (11)	3/11 = 0,27	0
VA (12)	4/11 = 0,36	0

Table 6. Indicators of social status and status indicators preferential for criterion C (+) and D (-)

Then, the next step was drawing the table for calculating the social status index (I_{SS}) using the formula (1) which showed us the position of each student within the group. The results showed us that student ID (6) is the favorite team mate that everyone wants to spend free time with, and have an index of 0,55. Therfore, he is the first choice for spending time for the majority of the members of the experimental group and also, good results showed students IS (7) with 0,45 index and BM (2), SA (9) and VA (12) with an index of 0,36. On the other hand, students NA (8), CM (4) and SC (10) with a low index of social status are isolated from the group and few want to spend free time with them.

The second index that we calculated was the index of preferential status (I_{SP}). Hence, we discovered that among the most chosen students was still ID (6) with an index of 0,55 and IS (7), SA (9) and BM (2) with a good index and a good status in the group made them also students that everyone wants to spend his free time with. Students that were rejected by the collective and with a low index of preferential status were SC (10) with an index of – 0,64, and CM (4) with -0,45 and NA (8).

The next step in analyzing the group relationship status was to calculate the   coefficient of the group cohesion (C_c) and the group cohesion index (I_c).

Group cohesion index calculation on criterion C (+) and D (-):

M_e = 10   1 – 6   1 – 3   2 – 12   2 – 7   4 – 10   5 – 6   6 – 9   7 – 11   7 – 12   11 – 12

M_r = 4   1 – 4   8 – 12   10 – 12   10 – 11

Within this index, we extracted the mutual relations of elections and rejections on criterion C and D. Furthermore, we discovered a number of 10 mutual elections (M_e), and a number of 4 mutual rejection (M_r), which means that the group of students with whom we worked have more mutual relations of sympathy and attraction than rejection.

Coefficient of group cohesion: $\quad C_C = \dfrac{2 * \sum A_R}{N(N-1)} = 0,15 \qquad$ where $C_c \, \varepsilon \, [0,1]$

Group cohesion index: $\quad I_C = \dfrac{2 * (\sum A_R - \sum R_R)}{N(N-1)} = \; 0,09 \qquad$ where $I_c \, \varepsilon \, [-1,1]$

After calculating the coefficient of group cohesion (0,15) and group cohesion index (0,09), we can draw the conclusion that our group has a good cohesion and is a compact group.

Social grams preparation (for criterion C and D)

Social gram elections and expressed mutual rejection:

Type of social gram: Target

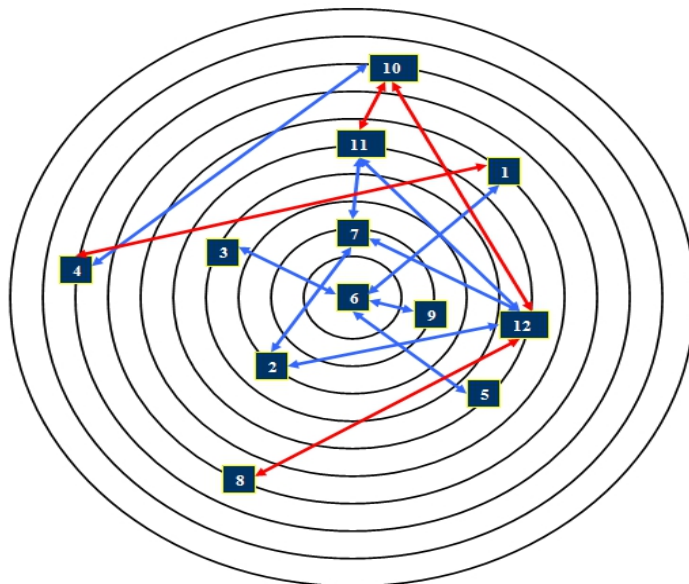Vectors used: - reject each other   mutual choice

Fig. 2. Social-gram elections and mutual rejection for criterion C and D

The last step in analyzing our group cohesion for criterion C and D (spending free time) was drawing the social-gram of mutual elections and rejection expressed by our students. Thus, we placed every student on a circle (from outside to inside) based on the I_{sp} (2) formula calculated in Table 6. Also, we can see that student ID (6) is the most elected members of our group for spending free time and is placed in the center of the social-gram, and then on the second circle, we have the student IS (7) and student SA (9)

and so on until the last circle where we have the most rejected students SC (10), CM (4) and NA (8).

Conclusion

Using the method of social metric survey, we could find and analyze the group cohesion and group relationships regarding issues of spending free time and socializing and collaborate in trainings. We found that our group is relatively compact and has more good relationships like collaboration and helping each other, elections and supporting than other relationships of rejecting and isolating. This study has helped us to understand the problems in our group and who are the students that the group do not entirely accept. Also, it has helped us reintegrate and help the rejected students.

From observations, we concluded that emotional relationships in the group of students converge on the idea that students "good in school" are elected as formal leaders have a big influence on other members. The communications that takes place around them are proposed to initiate various activities, as they are most needed in making correct decisions.

Being a small group of students, they still have various relationships. They influence each other, act on each other and cooperate or help each other. However, this are not done fully and are not consistent. There are students who are marginalized due to group behavior, isolations, being malicious with the colleagues at the beginning of the test, but towards the end were accepted and asked to participate in making decisions. For these students, we have given in the games tasks of management and responsibilities that rehabilitated them in front of their colleagues.

In addition, we followed the reactions resulting from the interaction of the group members and the influences of different students on the team.

Affective relationships observed in this group of students converge on the idea that students that demonstrated learning capabilities "faster" in specific means of the volleyball game are elected as leaders and are required more in the decision-making process.

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