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Original article

IMPROVING PERFORMANCE OF A BASKETBALL TEAM (10-12 YEARS) THROUGH DEVELOPING COHESION OF THE SPORT GROUP

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Abstract

Aim. The aim of this study was to analyze the relationships in a basketball team (10-12 years old) using the socio-metric survey method and see if improving the communication, socialization level and cohesion of the team can influence the performance of our team.

Methods. Our study focused on a group of young basketball players (12 males, 10-12 years old). We used as research methods the observation method, statistical method and socio-metric survey method. With this three research methods we were able to identify the problems in our group, the relationships between members of the group, the leaders of our team, team cohesion and we were able to discover the isolated members of the group and reintegrate them in the team.

Results. The socio-metric survey method showed us that at the Initial test the cohesion of the team was very low 0.01 with 7 mutual elections and 6 mutual rejection, with a low communication and socialization level, many conflicts between players and the performance of our team was not so good with 10 games, 2 victories and 8 losses. At the Final test after developing the communication and socialization level between members of the group, reintegrate the isolated members and improving the relationships between players, the cohesion of the team has grown till 0,04 with 9 mutual elections 4 mutual rejections. Also the results showed significant improvements, our team registered after 10 games 7 victories and 3 losses.

Conclusions. The socio-metric survey method is a very good way to understand and discover the relationships between players, leaders of the group and rejected members, also group cohesion and hierarchy of all members. Conclusions of our study showed us that improving group relationships, communication and socialization level, group cohesion and reintegrate the isolated members of our group, can help us in building a strong group with better results.

Key Words: Socio-metric survey methods, group relationship, team performance, reintegrate the isolated members.

Introduction

Scientists say that cohesion "is a dynamic process which is reflected in the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives and for the satisfaction of member affective needs" (Carron, Brawley, Widmeyer, 1998). Others refer to cohesion as "the total field of forces which act on members to remain in the group" (Bird, 1986).

Social cohesion is the degree to which the members of a team like each other and receive personal satisfaction from each other's presence (Cox, 2006).

Socialization through sport can improve team cohesion; better communication can help in the process of integration of members. Socialization is the process by which individual athletes become members of a culture or team (Cashmore, 2002).

Individuals learn behavior from other team members and adopt the behaviors and norms of that team. Socialization is a learning process. It is social cognition, a learning process that is influenced by an individual's social context. Socialization includes the immersion into a chosen sport and the learning of specialized skills relevant to that sport. (Hall, 2007).

Cohesiveness is the sum of all forces that cause members to remain in the group (Eys et al., 2006). Group cohesion may be based on the basis of task unity or for social purposes, but all groups have same purpose (Eys et al., 2006). Even in high task-oriented groups, such as sports or the military, social cohesion generally develops as a result of members instrumental and social interactions. Group integration represents the individual's perception of

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the group, while an individual attraction to the group represents a personal desire to be in the respective group.

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).

Tuckman (1965) wrote the stages of group behavior: norming, forming, storming and performing. Team building is another part of the process of creating a sense of unity and cohesiveness, enabling the team to function smoothly (Newman, 1984; Cox, 2006).

Also team captain is one of many nowadays studies main subjects focused on (Dupuis et al., 2006; Grandzol, Perlis, Draina, 2010; Voelker et al., 2011), the captain fulfills both task and social behaviors, coaching, helping or providing social support. All the factors involved in teams life, coaches, players and mass-media are supposing that team captain takes charges both in and off the field. Though most studies were focused on team captain few researchers turned their attention on the impact of informal leadership (Loughead et al., 2006). Shared leadership is an important characteristic of highly resilient sport teams (Morgan, Fletcher, Sarkar, 2013). Even if players that are leaders within a team often have the formal position of team captain, studies show that players within team can also have high influential position and can have the informal role of leaders of the team.

Some specialists, sport practitioners, scholars and organizations consider as integral components of sport psychology notions as coaches leadership style, motivating, team cohesion and coach efficiency (Weinberg, 2002).

Many scientists reflect on coach's efficiency and on coach's heavy impact on player's leadership, performance, behavior, psychological and socio-emotional characteristics. Though considering the influence of coaches on captain leadership most researchers say that coaches behavior directly influence the motivation, team cohesiveness and success also in many sports "the behavioral changes of the athletes are considered to be the direct result of coaching leadership (Horn, 2002).

Methods

The experiment took place in Bucharest with our mini basketball team from ACS Force Sport, in the period November 2014 until May 2015. The research sample was formed from our mini basketball man's team with 12 players, age between 10 and 12 years old, with a basketball experience o 2-3 years.

The research methods used in our study were: the observation method, which is one of the methods most commonly used for psychosocial research. It can be applied and organized relatively easily, and can quickly be adapted to and used in various situations in analyzing the evolution of groups. In addition, 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 through psychosocial interaction and psychological analysis of the whole group or a particular individual.

Also the main research method used in analyzing the relationships between members of the group was the socio metric survey method, with the socio metric test, which is one way to measure relationships between people, this test can describe, discover and evaluate social status and structure of the group, and also can measure the acceptance or rejection felt between peers. The conclusions after using the survey method and socio-metric test can give verdicts on the group cohesion that we lead (weld group or split group), group preferences on team captain or other social problems of the group that we want to investigate.

Analyzing these sympathetic relationships we can discover and improve group cohesion and can also stimulate positive relationships that can affect the evolution and the results of our team.

We applied the social-metric method on our research group, and we tried to respect the conditions and steps for a correct test administration (Chelcea, 1975):

- First step is to insure that group members know each other very well, so that they will be able to express their real preferences not random, our students had some socialization sessions and background introduction.
- We insure that their answers known to be honest will not be revealed to colleagues;
- We insure that their preferences will be expressed hierarchically.

This study that we applied to the support group tried to investigate the preferences of each of those students that would like to participate together in an activity, or to those they consider might be the team captain, or for carrying out educational and fun activities.

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As the author Chelcea et al., (1993) said, the socio-metric test indicators are: Value of I_{ss} and I_{sp} are information about how to classify individuals according to how they are accepted, rejected or isolated in the group:

Social status index of A:

$$I_{SS} = \frac{N(A)}{N-1} = \frac{\sum(A)}{N-1} \quad (1)$$

Preferential status index of A:

$$I_{SP} = \frac{\sum A - \sum R}{N-1} \quad (2)$$

Group cohesion index:

$$I_{eaf} = \frac{N_S(A)}{N-1} \quad (3)$$

Coefficient of group cohesion:

$$C_C = \frac{2 * \sum A_R}{N(N-1)} \quad (4)$$

Group cohesion index:

$$I_C = \frac{2 * (\sum A_R - \sum R_R)}{N(N-1)} \quad (5)$$

Then we had to process the socio-metric questionnaire responses and make the socio-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 socio metric matrix the statistical indicators remembered are calculated and so we formed the socio-gram. This provides a global overview of the group structure, allowing direct intuition of group cohesion and the position of each member in it.

Socio-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 concentrically circles, on the other orbits circles then we placed in score order the other subjects. We marked on the chart the preferences (choices or rejections) unilateral and mutual.

So we asked our players to write on the paper first 3 (numbered from 1 to 3) and the last 3 of their colleagues:

A. List in order the first 3 team-mates whom you socialize and collaborate during practice and games.

B. List in order the first 3 team-mates whom you socialize and collaborate less during practice and games.

Results

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

Table 1. Elections and rejections cast table. Initial Test November 2014

Subjects	+3	+2	+1	-3	-2	-1
AM (1)	10	9	8	6	2	3
GD (2)	4	8	7	12	6	5
IA (3)	8	10	9	11	1	2
IS (4)	8	7	11	6	1	12
MC (5)	12	8	3	6	2	10
MV (6)	8	7	11	4	5	2
OR (7)	4	8	11	1	10	12
PF (8)	11	4	7	6	1	3
SR (9)	1	10	4	11	6	8
SS (10)	1	8	9	12	7	5
TT (11)	8	5	12	3	1	6
VA (12)	3	8	7	6	5	10

In Table 1 and Table 2 we have sportive elections and rejections for the question in the survey. So for example in Table 2, subject AM (1) had chosen subject no. 10 with +3, subject no. 7 with +2 and subject no. 9 with +1, and rejected subject no. 6 with -3, subject no. 5 with -2 and subject no. 3 with -1.

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Table 2. Elections and rejections cast table. Final Test May 2015

Subjects	+3	+2	+1	-3	-2	-1
AM (1)	10	7	9	6	5	3
GD (2)	8	4	11	1	10	6
IA (3)	5	8	7	6	11	2
IS (4)	2	8	7	6	11	3
MC (5)	11	8	12	6	1	7
MV (6)	8	10	12	7	4	5
OR (7)	4	11	8	6	1	12
PF (8)	7	11	12	1	10	6
SR (9)	10	7	1	6	2	5
SS (10)	8	1	9	3	5	11
TT (11)	8	5	4	1	3	6
VA (12)	11	8	7	6	2	5

Table 3. Socio-matrix Intial test November 2014

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

Next step in our experiment was building the socio-matrix for Initial and Final tests. As you can see in Table 3 (Initial test) and in Table 4 (Final test), we put the choices of our sportive regarding the questions in the survey. In first line and column are the subjects from 1 to 12 with their choice of elections or rejections (+3, +2, +1 or -3, -2, -1). For example, in Table 3, subject no. 1 choose subject no. 10 with +3, subject no. 9 with +2 and subject no. 8 with +1, and rejected subject no. 6 with -3, subject no. 2 with -2 and subject no. 3 with -1.

Table 4. Socio-matrix Final test May 2015

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

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Socio-matrix indices applied sample calculation:

In Table 5 we had calculating indices of social status based on formula (1) and preferential status indices with formula (2); that showed us the hierarchy in our team.

Table 5. Indicators of social status and preferential status index of Initial test November 2014

Indices/ Students	AM (1)	GD (2)	IA (3)	IS (4)	MC (5)	MV (6)	OR (7)	PF (8)	SR (9)	SS (10)	TT (11)	VA (12)
I_{ss}	2/11	0	2/11	4/11	1/11	0	5/11	10/11	3/11	3/11	4/11	2/11
	0.18		0.18	0.36	0.09		0.45	0.91	0.27	0.27	0.36	0.18
I_{sp}	-3/11	-4/11	-1/11	3/11	-3/11	-8/11	4/11	9/11	2/11	1/11	2/11	0
	-0.27	-0.36	-0.09	0.27	-0.27	-0.73	0.36	0.82	0.18	0.09	0.18	

So we can see that some members of the group had been elected more, some rejected and isolated. Ones that have more elections are the Group cohesion index calculation:

A_r = 7 1 – 10 1 – 9 4 – 7 4 – 8 7 – 8 8 – 11 9 – 10

A_r – mutual elections (6)

R_r = 6 2 – 6 4 – 6 5 – 6 5 – 10 7 – 10 10 – 12

R_r – mutual rejections (7)

- Coefficient of group cohesion:

$$C_C = \frac{2*\sum A_R}{N(N-1)} = 14/132 = 0.11 \quad (8)$$

- Index of group cohesion:

$$I_C = \frac{2*(\sum A_R - \sum R_R)}{N(N-1)} = 4/132 = 0.02 \quad (9)$$

After calculating the Indicators of social status and preferential status we numbered the mutual elections (6) and mutual rejections (7). Then we calculated the Coefficient of group cohesion (8) and Index of group cohesion (9) for Initial test. We can see that we had in the initial test 7 mutual elections and 6 mutual rejections and that coefficient of group cohesion was low 0.11 and also index of group cohesion was low 0.02 that showed us that our group had a low grade of cohesion at the initial test.

Table 6. Indicators of social status and preferential status index for Final test

Indices/ Students	AM (1)	GD (2)	IA (3)	IS (4)	MC (5)	MV (6)	OR (7)	PF (8)	SR (9)	SS (10)	TT (11)	VA (12)
I_{ss}	2/11	1/11	0	3/11	2/11	0	6/11	9/11	2/11	3/11	5/11	3/11
	0.18	0.09		0.27	0.18		0.55	0.82	0.18	0.27	0.45	0.27
I_{sp}	-3/11	-2/11	-4/11	2/11	-3/11	-10/11	4/11	9/11	2/11	1/11	2/11	2/11
	-0.27	-0.18	-0.36	0.18	-0.27	-0.91	0.36	0.82	0.18	0.09	0.18	0.18

In Table 6 we can see the Indicators of social status and preferential status index for Final test. We can see that leaders of the group remain PF (8) with 0.82 and OR (7) with 0.36; also the rejected members were still MV (6) with -0.91 and IA (3) with -0.36.

- Group cohesion index calculation:

A_r = 9 1 – 9 1 – 10 2 – 4 4 – 7 5 – 11 7 – 8 8 – 11 8 – 12 9 – 10

A_r – mutual elections (10)

R_r = 4 3 – 11 4 – 6 5 – 6 6 – 7

leaders of the group as we can see in I_{sp} : PF (8) with 0.82 or OR (7) with 0.36, and some are rejected by the collective as MV (6) with -0.73 and GD (2).

R_r – mutual rejections (11)

- Coefficient of group cohesion:

$$C_C = \frac{2*\sum A_R}{N(N-1)} = 14/132 = 0.14 \quad (12)$$

- Index of group cohesion:

$$I_C = \frac{2*(\sum A_R - \sum R_R)}{N(N-1)} = 4/132 = 0.08 \quad (13)$$

In the Final test we had improved the relationships between our members so we had 9

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mutual elections (10) and just 4 mutual rejections (11), with a coefficient of group cohesion of 0.14 (12) and an index of group cohesion (13) of 0.08 that shows us that our group is more cohesive and the level of socialization and communication improved.

Socio-gram: Type socio-gram: Target; Vectors used: - mutual rejections ⟷ - mutual elections ⟷

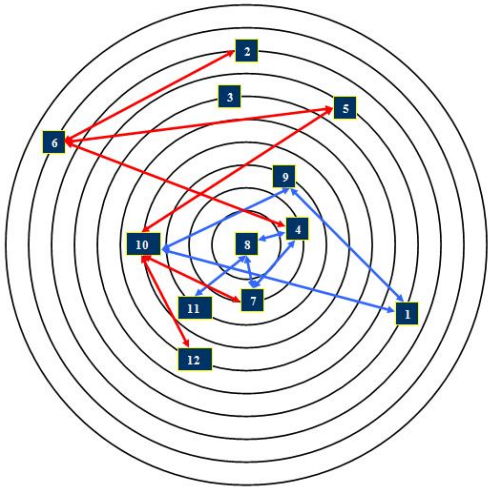

Fig. 1. Socio-gram elections and mutual rejection at Initial Test

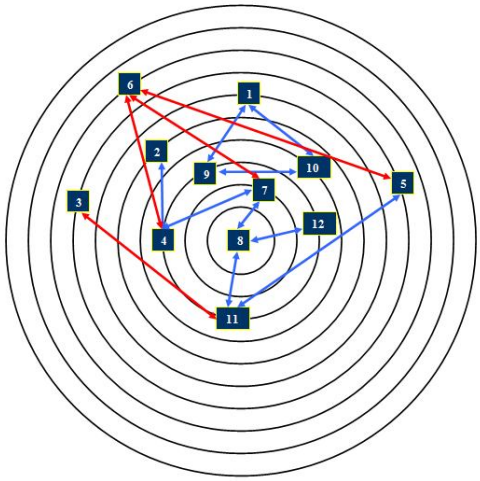

Fig. 2. Socio-gram elections and mutual rejection at Final Test

After calculating the Index of group cohesion and the coefficient of group cohesion we build up the socio-gram that is another graphic way to see the relationships between members of the group. So in the Fig. 1 we have the hierarchy for the Initial test and in the Fig. 2 we have the structure for the Final test.

Discussions

Cohesiveness of a team is a hard and longtime problem that reflects in the results of any performance team. Specialists confirm that having a cohesive group with good level of socialization and communication can improve the performance of any team so our study focused on verifying if this hypothesis confirms or not. We used the socio metric survey method in testing the cohesion of our team and analyzing the relationships between colleagues.

Socio-metric test confirmed our presumptions and we can see by analyzing the Socio-

gram for Initial test (Fig. 1) and Socio-gram for the Final test (Fig. 2) that the mutual elections improved and mutual rejections are fewer. So after analyzing the Index of cohesion (9) and (13) from both test we can see that cohesion has improved from 0.02 to 0.08. Also at the same time with the raise of cohesion our team performance has been improved so we can conclude that team cohesion is an important factor in team's evolution.

Sociomotricity and sociomotric field (Epuran et al. 2001) are other specific aspects of sportive groups.

As we can see in A. Muresan book regarding knowing and leading social groups, sociometric survey method can analyze and discover hidden characteristics of our group (Muresan, 2005). Compering to their results, in our study we discovered a less cohesive group having an index of 0.08.

Also other results showed very well results regarding the usage of socimetric test in finding different aspects in sportive groups, Zolotovitsky applying Moreno's sociometry find out that using this method can resolve and discover the communication problems in the sportive group. Also we find significant improvements in communication processes.

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