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Original Article

Leadership as a fundamental aspect of the performance of student-athletes in university men's sports teams

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Abstract:
The purpose of the research is to investigate the impact of athletes' leadership skills, determining effective performance and sports achievement; to theoretically prove and implement the authors' program, focusing on qualified athletes' leadership skills developing in university men's sports teams. *Materials*: the constative study involved a number of student-athletes – with different qualifying standards – 147 athletes and 18-22-year-olds from 13 men's sports teams of Dnipropetrovsk universities. The researchers' focus resolves around the factors that influence athletes' performance and sports achievement, based on forming a holistic-interactional paradigm frame that encompassed the research of the dynamics of the relationship between hypothetical constructs. The experiment involved 92 athletes, ranged from 18-22-year-olds – amateurs; professional sportsmen, key players of 8 sports teams. The experimental group (EG) athletes' training was done under the propounded program; and control group's (CG) training was structured on a regular basis. *Results.* Have highlighted the leading skills efficiency of men's teams' work in basketball, volleyball, mini-football and handball games; singling out peculiarities of each team's cohesion on the whole, as well as athletes' individual and psychological characteristics of their higher nervous activity. It is important to stress out that the social-cognitive theory of a personality describing the interaction between a personality, his behaviour, and the environment bears the evidence that athletes, regardless their temperament and character dimensions, can achieve high athletic performance. The study of teams' socio-psychological environments shows that the emotional variable makes up 49 %, behavioral one is 43 %, and the cognitive variable equals to 8 %. Overall, socio-psychological climate is assessed as a contradictory one, which testifies to ambiguous and incompatible relations between players, and their interests, goals and values achievement might lead to conflicts in a number of ways. *Conclusion.* Thus, to effectively develop and implement the suggested program the authors outlined and grounded the complex of organizational and methodological conditions for the development and implementation of the program of forming qualified athletes' leadership competency in university men's sports teams. Content-centered and thoroughly carried out, the forming experiment laid the grounds for athletes' performance to be considerably improved according to the propounded program.
Keywords: a personality, leadership, men's sports teams, competition, training.

Introduction

Continual improvement of athletes' sports training and efficient management of the educatory and training process is of vital importance at the present-day stage of Olympic and professional sports development in Ukraine (Briskin, 2014). The situation, the team and athlete attributes, the performance and the athletic achievement are joined variables, and the individual and the collective efficacy are the consequence of their reciprocal successful interaction, which considerably affects the process of athletes' training, its structure, competitive content, training tools and methods of control.

This perspective is supported by the relevant academic literature in the domain of sports psychology (Kulinich, 2004; Bezmylov, 2010; Mitova, 2013; Galan, 2016; Iermakov, 2016), moreover, it should be emphasized, that it becomes increasingly important for athletes to integrate their mental and physical aspect of performance. Consequently, special attention should be given to the cognitive aspects of athletes' performance, all psychological skills are to be developed and incorporated into regular practice sessions and then into competitions, providing high efficiency of the training process, high reliability and competitiveness efficiency.

It goes beyond identifying the skills and competences involved, an athlete as a personality, striving for self-development and self-improvement, experiences a considerable impact of drastic changes in terms of the contemporary sports games development. Professional sport is in high demand of players – trouble-shooters, able to take responsibility in solving operational problems and playing a lead (Voronova, 2006; Kozina, 2010; Sushko, 2011; Kostyukevich, 2012). Available research includes essential background information detailing the

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rationale and purpose of sports team leadership development program. The critical importance of leadership has been examined in different capacities. In order to accurately measure or determine an individual's leadership competency, the most essential characteristics of leadership must first be determined in sports games, in particular, in the course of careful study of a small-sized group's psychological specific abilities (Waldman, 2001; Mahate, 2005; Vincer, 2010; Moriano, 2011; Wang, 2011; Smolar, 2011, Sheriff, 2012).

In view of aforesaid, theoretical and methodological aspects of leadership are identified in the works of native scientists (Krichevsky, 1991; Ivashchenko, 2014). According to some scholars, effective leadership in sports is often directly linked to successful outcomes (Platonov, 1990; Kudyakov, 2000; Ilyin, 2011), styles of leadership (Vlasov, 2010), the leadership and management ratio in teams (Yablonko, 2008), the relation between personality traits and leadership perception (Voronov, 2006; Smolar, 2011).

Sport specific research has provided a conceptual framework for understanding sports team's leadership, an effective and dynamic leadership, based on a complex series of interactions between a Leader, and the other team members both in training and competition environment and explore patterns of the leadership formation and its further fostering. In general, research tasks were stipulated by the following factors: peculiarities of a leader's traits, definition of training methods that address specific leadership behaviors. Thus, the study of leadership attributes and behaviors should be used to improve the leadership management, which is a complex task and requires a sympathetic appreciation of the required multi-dimensional roles. Findings revealed the topicality of the research: an individual could learn to be an effective leader by adopting behaviors, used by other successful leaders.

Purpose of the research

To study the impact of athletes' leadership skills on performance effectiveness; to develop and scientifically ground the authors' program of forming qualified athletes' leadership skills in the university men's sports team.

Materials and Methods

To judge the validity of our study we'd rather provide a clear and precise description of the research methods as followed: theoretical analysis, generalization of the body of specialized and documentary evidence, cutting on the edge trends, classroom-observation/pedagogical method; psycho-diagnostic and psycho-physiological methods; expert evaluation method; video filming; and methods of mathematical statistics.

It is interesting to note that, classroom-observation method was conducted at the prime stage of our experiment as a means of familiarizing with the problem of leadership under study, enabling to elucidate what specific issues should be targeted. Psycho-diagnostic testing enhanced diagnostic accuracy of athletes' personality traits, identifying their aptitudes, abilities in general; study of the interpersonal relations structure according to G. Moreno; definition of an athlete's individual typological characteristics according to H. Eysenck. A. Mykhaliuk and A. Shalito; investigated teams' socio-psychological climate; researchers E. Moseyko and N. Nelisova suggested the study of an individual's social-psychological orientation in a team; the research of the team interaction effectiveness and communication skills of a Leader and the Followers during competitive activity was conducted by Yu. Hanin. These observations point to the need for conceptual models of collective performance that integrate both leadership influences and team dynamics. The expert evaluation method enabled measurement of the appropriate professional experts' assessments. The purpose of questionnaire was to test the impact of the propound program on teams' social and psychological environment. To assess an athlete's neurodynamic properties there was used Jaguar computer system, computer psycho diagnostic software 'Personal Psychology'; Windows version of Effecton Studio 2005 (certificate of registration in the Russian educational software of Ministry of Education of the Russian Federation № 1717 from 10.12.96). The classroom-observation/pedagogical method was conducted to determine the authors' program efficacy in terms of forming leadership skills in university men's sports teams. The method of mathematical statistics was involved to work the findings out.

Constative experiment engaged student-athletes from university men's sports teams (147 athletes, 18-22-year-olds, with different qualifying standards (MS (Master of Sport) – 4 pers.; (CMS (Candidate for Master of Sport) – 26 pers.; I level – 104 pers.; II level – 13 pers.), joining 13 men's sports teams of Dnipropetrovsk universities: (Dnipropetrovsk State University of Economics and Law (DSUEL), National Mining University (NMU), Dnipropetrovsk State Agrarian University (DSAU), Ukrainian State Chemical Technology University (USCTU), National Metallurgical Academy of Ukraine (NMAU), including: basketball (NMU –12 pers.; DSUEL – 10 pers.; USCTU – 12 pers.), volleyball – (DSAU –10 pers.; NSU –10 pers.; UDHTU – 9 pers.; NMU – 10 pers.); mini-football (DSAU–12 pers.; NSU – 10 pers.; UDHTU – 13 pers.); handball (NMU – 10 pers.; USCTU – 12 pers., NMU – 13 pers.). The forming pedagogical experiment was conducted to determine the effectiveness of the implemented program. The experiment involved 92 athletes, 18 – 22-year-olds, qualified athletes (MS – 4 pers.; CMS – 21 pers.; I level – 67 pers.), joining 8 sports teams, in particular: Basketball (USCTU) 12 pers. (MS – 1 pers.; CMS – 4 pers.; and I level –7 pers.); Volleyball (NMU) 10 persons (CMS –1 pers.; and I level – 9 pers.); Mini-football (DSAU) 12 persons (CMS – 2 pers.; I level – 10 pers.); Handball (NMU) -13 people (MS – 1 pers.; CMS – 4 pers.; and I level – 8 pers.) and, respectively, control groups teams: Basketball (NMU) 12 people (MS – 1 pers.; CMS – 4 persons.; and I level – 7 pers.); Volleyball (NMU) - 10

persons (CMS – 2 pers.; and I level – 8 pers.); Mini-football (USCTU) -13 persons (CMS – 1 pers.; and I level – 12 pers.); Handball (NSU) -10 people (MS – 1 pers.; CMS – 3 pers.; and I level – 6 pers.).

It should be noted, that experimental group (EG) athletes were trained under the proposed program, and meanwhile control group (CG) athletes were trained on a regular basis.

Results

The outcomes of our research pointed out, that student-athletes' developing leadership skills is an avenue for improvement the athletes' performance. The research proved the efficiency of leadership as a fundamental aspect of sports performance, particularly within sports team environments. However, the problem of an athlete leadership in sports teams has not been relevantly highlighted, evaluated and theoretically grounded, and it immensely contributes to producing a significant impact upon a variety of team-related factors including fulfillment, cohesion, and team dynamics. Notwithstanding the ample research on psychology and pedagogy aspects of leadership and their effective management, the focus of our studies revolves around the importance of the approaches that should be adopted in developing athletes-leaders' stance and their associated leadership skills that presupposes the novelty of our investigation.

According to each athlete's socio-metric test there were distinguished an Athlete Leader/Leaders, the Followers, the neglected and the isolated players, and consequently, their personal and characterological typology was developed. The authors made in-depth athletes' characterology analysis, based on athletes' team status. While distinguishing the athletes' temperaments, we draw to the conclusion that the team-members possess all the types and traits. The characterological observation detected that 45 % of leaders are of sanguine type, 37 % - are of choleric one, low percentage of leaders are, respectively, phlegmatics and melancholics (11 %; 7 %). The Followers, neglected and isolated athletes are mostly of choleric type (46 %; 55 %; and 45 %, respectively). Furthermore, 43 % of the Followers, 27 % of the neglected and 22 % of the isolated players were characterized as having sanguine temperament. Low index of phlegmatic type was detected in 6 % of the Followers and 15 % of the neglected players, whilst the isolated ones showed a bit higher indicator – 33 %, a small percentage of players appeared to be melancholics, namely: 5 % of the Followers and 3 % of the neglected team players. The findings proved the fact that high performance can be achieved by any athlete, regardless his temperament.

It is important to stress out that the study of sports teams' socio-psychological environment revealed the level of a team's cohesion and each athlete's adaptability to pursuing common goals. The socio-psychological climate was assessed according to three components, facilitating to determine the nature of players' interpersonal relations. In particular, the emotional variable is 0.76 points (or makes up 49 %), and is characterized as a positive one, resulting in team members' empathy factor. The behavioral component makes up 0.65 points (43 %) and is characterized as inconsistent one, showing the lack of players' reciprocal interaction in out-of-sport activities. Meanwhile, the cognitive variable appeared to be minimal and equals to 0.15 points (8 %) and is characterized as a negative one and showing a team's incompetence in giving an ample description of other players' personal and professional skills. Evaluating and measuring socio-psychological climate by three components, defining their positive and negative aspects, we came to the conclusion that the team's socio-psychological climate is assessed as a contradictory one, which testifies to ambiguous and incompatible relations between players, thus, their interests, goals and values achievement might lead to conflicts in a number of ways.

The analysis of the tendency to leadership and management has shown that in (basketball, volleyball, mini-football, handball) teams 97.5 % of players seek high status of an Athlete Leader, 95.7 % of which are Leaders-managers. Each of four sports teams' players' indices of informal leaders coincide with those players who could intuitively play a lead. The Followers' propensity for leadership equals to 67.2 % and those who aspire management equals to 57.2 %. Therefore, it can be noted that sports team's interpersonal interaction and awareness of situational processes enable to successfully achieve team functioning. In particular, the focus of our study revolves around the way in which social features and processes affect athletes' cognition; taking responsibility for decision-making in a team; and the premises of achieving team compatibility. The social-cognitive approach to a team's smooth functioning is of a significant value as far as a coach's functions and real opportunities are strictly regulated. It was figured out, that there is a statistical difference ($p < 0.05$) in the Leaders and the Followers' sensorimotor reactions, especially in terms of a simple and a complex visual-motor response and reaction time (Table. 1).

Table 1. Indices of sensory-motor reactions of sports teams' athletes (n = 147)

Index	Athletes	$\bar{x}$	S	Me	25%	75%	p
Visual-Motor Simple Reaction, ms	Leaders (n=25)	301,42	24,63	299,5	284,0	313,5	<0,05
	Followers (n=122)	351,21	40,63	347,0	315,0	381,0	
Auditory Sensory-Motor Simple Response, ms	Leaders (n=25)	177,35	11,04	177,0	167,0	188,0	>0,05
	Followers (n=122)	199,05	33,12	187,0	181,0	204,0	

Visual-Motor Complex Reaction, ms	Leaders (n=25)	300,32	29,67	305,0	296,0	311,1	<0,05
	Followers (n=122)	340,45	26,41	353,0	322,0	372,0	
Reaction Time (RT), ms	Leaders(n=25)	73,32	7,21	71,5	68,0	78,5	<0,05
	Followers (n=122)	83,56	7,49	83,0	79,0	88,0	

On carrying out the experiment, we could estimate an average range of indices of sensorimotor reactions, typical for Athlete Leaders and Followers in sports activities. While working out the propound program, we took into consideration the peculiarities of athletes' consistent interaction in sports teams in both training and competing environment, the team cohesion, athletes' personal and characterological typology and their psycho-physiological state.

The obtained evidence-based results of the constative experiment prove the efficiency of our propounded program on forming leadership skills in (non-sports) university men's sports teams. In developing the program, we adhere to the scientific and methodological principles of designing and implementing training programs. What is more imperative, psychological skill training is the deliberate, systematic practice of strategies and methods designed to boost athletes' performance, by enhancing their psychological skills.

The importance of the launched program lies in creating favorable conditions for the formative stage of an individual's growth, involving leading skills development, and forming athletes' psycho-social competence. The principal difference from conventional forms of training lies in the organization of such work that aims at gaining easy-going teams' leaders interaction and demonstrates that the number of different leaders in the team was positively correlated with team confidence, team identification, and a higher place on the team ranking.

Another critical moment of study was the stress on facilitative skills necessary for effectively utilizing performance skills. Psychological and pedagogical methods proved that psychological skills, like technical or tactical aspects of a sport, should be cultured, developed, and experienced by the athlete. These include communication (verbal and non-verbal), training motivation, teambuilding, teamwork and team spirit. These methods include goal setting, self-talk, imagery, mental rehearsal, and relaxation.

Other significant, and mainly defining criteria for the effectiveness of sports teams' performance are as followed: each athlete has different sporting needs, psychological skill development, orientations and experience, so they might require applying science-based content knowledge as well as practical experiential knowledge to address many critical factors, that determine the result of efficient individual and group interaction.

To test feasibility of the proposed program of forming leadership skills in (non-sports) university men's sports teams we conducted a comparative analysis. The comparison was not difficult to attain, as long as overall research findings regarding EG and CG students-athletes' indices had a slight difference. It should be emphasized that during the classroom-observation experiment the positive dynamics of indicators characterizing socio-psychological environment of both EG and CG students-athletes is definitely traced.

According to comparison-group study in terms of a socio-psychological environment, the EG cognitive variable was detected as a considerably progressed (0,99 points) and considered as a positive tendency. The emotional (1,0 point) and behavioural (1,0 point) ones are defined as positive components as well. Moreover, it has a positive effect on a range of factors including team confidence, team resilience; athlete leaders aired their cognitive flexibility and competence to ensure high standards and a strong work ethic, to help the team to handle adversity, to facilitate a better team chemistry development, to urge the coach to better understand the team, to help to minimize and manage conflict– and this is the pledge of success in sports teams.

Tracking CG progress, we can state that the results are low (0,26 points) and a cognitive variable is defined as a negative one, whilst the emotional and behavioural (0,94 points and 0,85 points, respectively) are determined as positive components. Overall, socio-psychological climate is assessed as a contradictory one, which testifies to ambiguous and incompatible relations between players, and their interests, goals and values achievement might lead to conflicts. Meanwhile, the cognitive variable appeared to be minimal and is characterized as a negative one and showing a team's incompetence in giving an ample description of other players' personal and professional skills.

Recent research explored the impact of the author's pilot project on social and psychological healthy environment in university sports teams. The experts highlighted the benefits of athlete leadership in teams by examining their relationship with a range of important team-related factors including: satisfaction and a team dynamics, its impact on task and social cohesion performance; external perceptions of effective leadership.

Such assets as amiability, satisfaction, empathy, speaking in favor of the emotional variable underwent a slight change. The experts established considerable enhancement of cooperative, harmonious, interdependent environment, characterizing the behavioral component, and noted the positive impact of the program on a psychological atmosphere in the team that improved the social and psychological climate. Concordance coefficient makes up ($W=0,774$, $p<0,05$) and testifies to experts' high degree of consistency.

One of the efficiency criteria of implemented program is the developmental dynamics of physiological functions, stipulated by peculiarities of each team's cohesion on the whole, as well as athletes-leaders and followers' individual and psychological characteristics of their higher nervous activity, the probability of which is determined by the criterion of the Wilcoxon signed-rank test.

Findings of the research on progressed indices, characterizing EG athlete leaders' sensorimotor reactions as compared with CG ones as being boosted and demonstrated efficiency of our propounded program (Table 2), in particular:

- The indices of basketball players' visual-motor simple reaction increased to 8, 4 %, reaction time – to 6, 0 %. Nonetheless, there was no evident advantage $p<0,05$and $p<0,01$, respectively;
- The indices of volleyball players' visual-motor simple reaction (= $p<0,05$) and reaction time ($p<0,01$) increased to 8,9 % and 7,2 %, respectively;
- The indices of mini-football players' visual-motor simple reaction increased to 8, 4 %, reaction time – to 6, 2 % ($p<0,05$ and $p<0,05$, respectively);
- The indices of handball players' visual-motor simple reaction increased to 8, 6 %, reaction time – to 8, 5 %. ($p<0, 05$).

Table 2 The evolution of athlete leaders' sensorimotor reactions in sports teams before and after the experiment

Sports teams Leaders	Index							
	Visual-Motor Simple Reaction, ms		Auditory sensory-motor simple response, ms		Visual-Motor Complex Reaction, ms		Reaction time (RT), ms	
	before	**after**	before	**after**	before	**after**	before	**after**
Basketball (EG), n = 2	329,5 ±20,51	**233,5 ±16,26**	194,5 ±9,19	**163,0 ±2,83**	258,5 ±3,54	**250,5 ±7,78**	69,0 ±2,83	**34,5 ±3,54**
Basketball (CG), n = 3	316,3 ±14,01	**277,3 ±11,93**	185,0 ±6,08	**173,3 ±4,16**	241,7 ±9,07	**251,0 ±9,54**	73,0 ±5,0	**57,0 ±2,65**
p	>0,05	**<0,05**	>0,05	**>0,05**	>0,05	**>0,05**	>0,05	**<0,01**
Volleyball (EG), n = 2	275,5 ±16,26	**242,0 ±2,83**	171,0 ±8,49	**161,0 ±1,41**	324,0 ±12,73	**251,0 ±4,24**	71,0 ±1,41	**47,5 ±2,12**
Volleyball (CG), n = 2	296,5 ±6,36	**255,5 ±6,39**	197,0 ±1,41	**160,5 ±0,71**	312,0 ±1,41	**293,0 ±10,38**	69,0 ±1,41	**66,0 ±0,01**
p	>0,05	**>0,05**	>0,05	**>0,05**	>0,05	**<0,05**	>0,05	**<0,01**
Mini-football (EG), n = 2	308,5 ±4,95	**231,0 ±5,66**	172,5 ±6,36	**162,5 ±2,12**	310,5 ±2,12	**262,0 ±8,49**	69,5 ±3,54	**38,0 ±1,41**
Mini-football (CG), n = 3	305,7 ±14,84	**274,3 ±12,86**	169,7 ±7,37	**167,3 ±4,93**	319,7 ±26,31	**272,3 ±76,30**	73,7 ±8,14	**60,7 ±7,37**
p	>0,05	**<0,05**	>0,05	**>0,05**	>0,05	**>0,05**	>0,05	**<0,05**
Handball (EG), n = 3	284,3 ±6,51	**235,0 ±12,29**	177,0 ±3,0	**162,3 ±4,04**	297,7 ±3,51	**231,3 ±8,24**	77,7 ±9,87	**44,7 ±8,50**
Handball (CG), n = 2	273,5 ±0,71	**274,0 ±2,83**	170,5 ±4,95	**166,5 ±3,54**	300,0 ±2,83	**272,5 ±9,19**	70,0 ±4,24	**64,0 ±5,66**
p	>0,05	**<0,05**	>0,05	**>0,05**	>0,05	**<0,05**	>0,05	**>0,05**

Notes: EG – Experimental Group; CG– Control Group

Quantitative analysis of the follower's sensorimotor reactions in sports teams before and after the experiment showed improvement in EG followers as compared with CG followers' sensorimotor reactions indices (Table 3), in particular:

- Basketball players' visual-motor simple reaction indices improved to 8,7 % and visual-motor complex reaction to 8,9 %, respectively ($p<0,05$);
- Volleyball players' visual-motor simple reaction indices improved to 8,4 % and and visual-motor complex reaction 8,5 %, respectively ($p<0,01$);
- Football players' visual-motor simple reaction indices improved to 8, 4 %, auditory sensory-motor simple response – 9, 3 %, and visual-motor complex reaction increased to 6,7 %. However, there was no evident advantage $p<0,01$; $p<0,05$; $p<0,01$, correspondingly;
- Handball players' visual-motor simple reaction indices improved to 8, 9 %, reaction time increased to 7, 7 % ($p<0, 05$ and $p<0, 05$, correspondingly).

Thus, to effectively develop and implement the suggested program the authors outlined and grounded organizational and methodological principles for achievement its goals: in any sport category, team building and team work are both crucial.

Table 3 The evolution of the follower's sensorimotor reactions in sports teams before and after the experiment

Sports Teams Followers	Indicator							
	Visual-Motor Simple Reaction, ms		Auditory sensory-motor simple response, ms		Visual-Motor Complex Reaction, ms		Reaction time (RT), ms	
	before	**after**	before	**after**	before	**after**	before	**after**
Basketball (EG), n = 10	380,8 ±20,77	**268,2 ±18,29**	236,4 ±27,99	**180,9 ±8,96**	334,8 ±27,44	**289,4 ±17,54**	80,6 ±4,81	**52,8 ±9,57**
Basketball (CG), n = 9	372,8 ±13,04	**305,2 ±20,37**	225,1 ±17,74	**186,0 ±5,63**	349,8 ±36,68	**323,9 ±34,34**	83,3 ±4,15	**62,3 ±7,45**
p	>0,05	**<0,05**	>0,05	**>0,05**	>0,05	**<0,05**	>0,05	**>0,05**
Volleyball (EG), n = 8	346,1 ±54,09	**277,1 ±15,24**	183,6 ±6,30	**170,3 ±4,86**	358,4 ±21,66	**305,6 ±21,0**	84,6 ±5,7	**64,3 ±7,97**
Volleyball (CG), n = 8	350,1 ±43,26	**326,4 ±29,60**	182,0 ±6,04	**173,4 ±8,68**	357,0 ±25,27	**332,6 ±19,88**	87,9 ±5,54	**75,3 ±6,07**
p	>0,05	**<0,01**	>0,05	**>0,05**	>0,05	**>0,05**	>0,05	**<0,01**
Mini-football (EG), n = 10	333,2 ±35,49	**261,3 ±18,91**	182,2 ±9,83	**170,4 ±5,83**	359,0 ±24,62	**307,6 ±16,39**	79,3 ±6,63	**46,3 ±5,58**
Mini-football (CG), n = 10	356,5 ±39,21	**311,0 ±26,57**	187,3 ±11,45	**182,6 ±9,38**	353,1 ±17,85	**327,8 ±15,02**	80,0 ±6,62	**69,3 ±6,58**
p	>0,05	**<0,01**	>0,05	**<0,05**	>0,05	**>0,05**	>0,05	**<0,01**
Handball (EG), n = 10	340,7 ±41,99	**261,7 ±11,87**	183,5 ±5,08	**175,3 ±5,29**	351,7 ±26,72	**296,5 ±19,0**	87,6 ±9,59	**55,0 ±4,59**
Handball (CG), n = 8	330,9 ±41,38	**298,4 ±2,46**	185,1 ±6,53	**180,1 ±10,03**	340,4 ±27,74	**310,6 ±19,89**	85,3 ±5,06	**71,4 ±4,07**
p	>0,05	**<0,05**	>0,05	**>0,05**	>0,05	**>0,05**	>0,05	**<0,05**

Notes: EG – Experimental Group; CG – Control Group

It is important to acknowledge that the most widely used measurement in this regard was tested during the formative experiment (Table 4).

Table 4 Experimental testing of social interaction/interpersonal dynamics indices in five sports teams under study during the competition (%)

Social Interaction/ interpersonal dynamics	FREQUENCY OF SOCIAL INTERACTION (%)							
	Volleyball (n=20)		Basketball (n=24)		Mini-football (n=25)		Handball (n=23)	
	EG	CG	EG	CG	EG	CG	EG	CG
Familiarizing	27,2	29,1	46,6	43,0	44,4	34,4	40,4	39,0
Stimulating	40,6	32,2	26,0	23,5	24,8	24,4	23,8	20,8
Estimated Expressive (positive)	19,7	18,5	14,4	15,8	12,2	17,3	19,0	16,0
Estimated Expressive (negative)	12,5	20,2	13,0	17,7	18,6	23,9	16,8	24,2
Total interpersonal dynamics :	100	100	100	100	100	100	100	100
Total number of hits	309	367	292	405	295	393	352	426

Obtained data are quite sufficient to support the conclusion that there were defined indices of social interaction/interpersonal dynamics in five sports teams during the competition (during experimental five games according to the competition schedule). Interestingly, EG athletes underwent considerable changes in terms of interpersonal dynamics, in particular, in EG volleyball players as compared with CG players' interaction slacked off to 28,5 %; in basketball – to 38,6 %; in mini-football – to 33,2 %; and handball – to 21,0 %. Reducing of social communication was observed in four categories, but the main number of interpersonal dynamics decreased due to unproductive contacts, determined leadership influences the teams' mutual aspirations to achieve their goals. Consequently, the experiment recognizes the positive outcome of the authors' program – the most effective ways to have a solid team is to enhance communication skills, to ignite players' passion and translate it into success. Therefore, research shows how imperative are benefits of the social-cognitive theory of a personality since the general psychological teams' climate that provides with a clearer understanding of important features of successful coach-athlete, leaders and followers' relationships in university men's sports teams.

Discussion

Although scientific studies on athletes' leadership skills, determining effective performance and sports achievement have received scant attention from researchers, the authors delved into this aspect, immensely developed and contributed to understanding of the importance of fostering interest in creating favorable psychological climate, i. e. to reach an ultimate goal – succeed in enhancing and protecting a team. Moreover, the authors put an emphasis on obtaining completely new data in terms of the problems under study. The outcomes should become a research priority in the domain of sports psychology to empirically verify presumed correlations of the mentioned hypothetical constructs of a team's cohesion on the whole, as well as athletes' individual and psychological characteristics, and interpret them according to the obtained parameters (Krysheva, 1998; Gordon, Ilyin, 2003; Bezmylov, 2010; Kostyukevich, 2012; Mitova, 2013; Shamardin, 2013)

Moreover, we shed a further light on the scholars' vision (Kudyakov, 2000; Voronov, Shutova, 2006; Smolar 2011; Sheriff, 2012; Romanchyshyn, 2015) of a leadership as a socio-psychological phenomenon, caused by indirect and direct influence of objective environmental and personal factors. Moreover, the leading influence is referred to objective determinants. We enhanced other studies outcomes (Volosovych, 1995; Tsymbaliuk, 2004; Kulinich, 2004; Silya, 2007; Burton, 2009; Kozina 2010; Sushko 2011; Money, 2011), determining that regardless a leader-follower's social and psychological role in the sports team, an athlete develops his synergy, regarded as a subject and an object of forming leadership skills.

While comparing the importance of interactional centrality across different roles, we see that in every sport the task leader was the player most likely to occupy a leading position. The results regarding general leadership highlighted the leading skills efficiency of men's teams' work in basketball, volleyball, mini-football and handball; singling out peculiarities of each team's cohesion on the whole, as well as athletes' individual and psychological characteristics of their higher nervous activity. The social-cognitive approach to a team functioning considered the typology – comradely and sociable (sanguine), hot-tempered and tetchy (choleric), restrained and introverted (melancholic) as well as impassive and misbalanced (phlegmatic) – and enabled a notable expansion of what is known about in sports psychology. It is important to stress out that the social-cognitive theory describing the interaction between a personality, his behaviour, and the environment bears the evidence that athletes, regardless their temperament and character dimensions, can achieve high athletic performance. Furthermore, in sports teams there is a Leader/Follower's interdependence of situation and/or group occurrences, personality traits, environmental factors, and athlete's performance (individual and team) and sports achievement, and require formation of the dynamic interaction mode.

The team's performance totally results in reciprocal team-members' dependence on high training and competition – and consequent stress, since competitive sports situations are characteristically very stressful. It is assumed that sports teams' Leaders/ Followers' sensorimotor reactions indices have no evident advantage $p<0,05$ in visual-motor simple and complex reaction and reaction time, with a sheer dominance of central nervous system excitatory process based on correlation of proactive and slowing down responses.

The investigation facilitated in outlining and grounding the complex of organizational and methodological conditions for the development and implementation of the program of forming qualified athletes' leadership competency in university men's sports teams. Content-centered and thoroughly carried out, the forming experiment laid the grounds for athletes' performance to be considerably improved according to the propounded program. Yet, future research that focuses on the psychological requirements and demands of men's sports teams' successful leadership management is encouraged.

In accordance with above mentioned considerations, the program was designed to emphasize that a student-athlete personality, his socio-psychological stability is a predictor and one of the determinants of performance and sports achievement on both group and individual levels. However, it is necessary to point out that successful and unsuccessful players do not solely differ in abilities and traits, but also the level of technical-tactical knowledge, motor and psychological skills and habits. Moreover, the relationship between student-athletes, the environment and their achievement is very formidable and men's sports teams' performance and sports achievement in (basketball, volleyball, mini-football, and handball) is examined both from effectiveness perspective (a personal as well as the team-goaled achievements) and from a psychological angle (optimal psychological health on the collective and individual levels). The suggested authors' program outlined the purpose of the research, objectives and principles of educational training. They are as followed: to shape a student-athlete as a personality, to mould his consciousness and pro-activity, to foster his systematic consistency, to outline and boost his goal-oriented awareness and strengths. The program includes four stages: a conceptual; an organizational; a diagnostic; a correctional, which included group and individual forms; and embraces evaluation of the program effectiveness according to specific criteria in bridging the gap: individual performance, group performance, organizational effectiveness. Therefore, we can conclude that effective leadership encompasses an understanding of motivation and is likely to minimize any loss of productivity through the development of both task and group cohesion, allowing a team to operate at, or close to its potential.

Conclusions

Evidence-based data give us the grounds to declare as follows:

1. The characterological observation detected that 45 % of Leaders are of sanguine type, 37 % - are of choleric one, low percentage of leaders are, respectively, phlegmatic and melancholic (11 %, 7 %, correspondingly). The Followers, neglected and isolated athletes are mostly of choleric type (46 %, 55 %, and 45 %, respectively). Furthermore, 43 % of the Followers, 27 % of the neglected and 22 % of the isolated players were characterized as having sanguine temperament. Low index of phlegmatic type was detected in 6 % of the Followers and 15 % of the neglected players, whilst the isolated ones showed a bit higher indicator – 33 %, a small percentage of players appeared to be melancholic, namely: 5 % of the Followers and 3 % of the neglected team players. The findings proved to the fact that high performance can be achieved by any athlete, regardless his temperament.
2. The study of teams' socio-psychological environments shows that the emotional variable makes up 49 %, behavioral one is 43 %, and the cognitive variable equals to 8 %. Overall, socio-psychological climate is assessed as a contradictory one, which testifies to ambiguous and incompatible relations between players, and their interests, goals and values achievement might lead to conflicts in a number of ways.
3. The analysis of the tendency to leadership and management has shown that in (basketball, volleyball, mini-football, and handball) teams 97.5 % of players seek high status of an Athlete Leader, 95.7 % of which are Leaders-managers. Each of four sports teams' players' indices of informal leaders coincide with those players who could intuitively play a lead. The Followers' indices for leadership substantially differ and equal to 67.2 % and to 57.2 %, respectively.
4. It is assumed that sports teams' Leaders/ Followers' sensorimotor reactions indices have no evident advantage $p<0,05$ in visual-motor simple and complex reaction and reaction time, with a sheer dominance of central nervous system excitatory process based on correlation of proactive and slowing down responses.
5. . Obtained constative study data are quite sufficient to be implemented in qualified athletes' leadership skills developing in university men's sports teams.

Our goal was attained by framing successful elaborating and putting into practice the suggested program:

- EG cognitive variable was detected as a considerably progressed (0,99 points) and considered as a positive tendency. The emotional (1,0 point) and behavioural (1,0 point) ones are defined as positive components as well. Moreover, it has a positive effect on a range of factors including team confidence, team resilience, athlete leaders aired their cognitive flexibility and competence to ensure high standards and a strong work ethic, to help the team to handle adversity, to facilitate a better team chemistry development, to urge the coach to better understand the team, to help to minimize and manage conflict – and this is the pledge of success in sports teams. Tracking CG progress, we can state that the results are low (0,26 points) and a cognitive variable is defined as a negative one, whilst the emotional and behavioural (0,94 points and 0,85points, respectively) are determined as positive components;
- the coaches' expertise in four sports teams spoke in favor of a critical impact of the suggested program on enhancement of EG socio-psychological climate. Concordance coefficient makes up ($W=0,774$, $p<0, 05$) and testifies to experts' high degree of consistency;
- it was figured out, that there is a statistical difference ($p <0.05$-$0,01$) in the EG Leaders as compared to CG Leaders' sensorimotor reactions, especially in terms of a simple and a complex visual-motor responses and reaction time. This fact points out to high efficiency detection, and results in Basketball and Mini-football players' visual-motor simple reaction indices improvement; Volleyball players' visual-motor complex reaction and reaction time; Handball players' visual-motor simple and complex reaction indices improvement. EG Followers as compared with CG Followers demonstrated veritable improvement index ($p<0,05$-$0,01$) according to Psychophysiological testing: in basketball – a simple and a complex visual-motor responses; volleyball – visual-motor simple reaction and reaction time; mini-football – visual-motor simple reaction, auditory sensory-motor simple response and reaction time; and handball – visual-motor simple reaction and reaction time;
- reducing of social communication was observed in four categories, EG athletes underwent considerable changes in terms of interpersonal dynamics, in particular, in EG volleyball players as compared to CG players' interaction slacked off to 28,5 %; in basketball – to 38,6 %; in mini-football – to 33,2 %; and handball – to 21,0 %.

Conflicts of interest

The authors declare that they have no competing interests.

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