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RELATION BETWEEN MENTAL IMAGERY AND ATHLETES' TEAM EFFICIENCY IN THE FIELDS OF FUTSAL, BASKETBALL, VOLLEYBALL AND HANDBALL

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ЗВ'ЯЗОК МІЖ МЕНТАЛЬНИМИ ОБРАЗАМИ І КОМАНДНОЮ ЕФЕКТИВНІСТЮ У СФЕРІ МІНІ-ФУТБОЛУ, БАСКЕТБОЛУ, ВОЛЕЙБОЛУ ТА ГАНДБОЛУ. Аліреза БАХРАМІ¹, Фаріборз МУХАММАДІПОВ² Володимир СІВЦЬКІ³ Аббас САРЕМІ¹ Аракський університет, Арак, Іран, ²Семнанський університет, Семнан, Іран, ³БДУФК, Мінськ, Білорусь.

Анотація. Метою статті є аналіз взаємозв'язку між формуванням ментальних образів та ефективністю групової діяльності в командних видах спорту. Для дослідження були відібрані 48 чоловіків та 48 жінок, які займаються футзалом, баскетболом, волейболом та гандболом у провінції Markazi Республіки Іран.

Були використані методи аналізу індивідуальних даних, анкети для вивчення особливостей ментальних образів (Holl & Colleagues 1998), запитальник групової ефективності (Short & Colleagues, 2004), методи математичної статистики: кореляційний аналіз (за Пірсоном) та аналіз достовірності відмінностей (за Стьюдентом), які реалізовано в статистичному комп'ютерному комплексі SPSS (18 версії).

Результати дослідження показали пряму залежність між здатністю до створення ментальних образів та групової ефективності спортсменів ($r=0.58$). Піл час порівняння чоловічих та жіночих команд суттєвих відмінностей не виявлено. Проте порівняння групової ефективності чоловіків та жінок виявило достовірно більші значення цього показника в чоловічих командах ($p=0.006$).

Ключові слова: спортсмени, образи, групова ефективність.

Introduction. Nowadays by improving sport skills, using other training methods for reaching the victory and performance climax is very important which is called beyond sport exercises. One of these methods is using auto-adjusted guideline for win and success in sport. All of us can remember the minutes in sport matches that a team or an athlete despite of technical, tactical and physical complete readiness can't do their best of inappropriate mental status. Nowadays mental skills play significant roles in athletes' performance (22). Mental skills are accounted as main and proofed components in continues performance in high levels of competition. In other words, one of the important differences between athletes of higher rank can be attributed to athletes' mental skills (2). One of the mental skills used by athletes is mental imagery or mental practice. Recently, sport psychologist have divided mental skills into 3 classes: mental-basis, mental-physical and mental-recognized. Mental imagery is a recognized skill which is achieves thoughts, memory, understanding and learning processes (3). Several scientific studies show that mental imagery improves sport performance. Sport matches take place in atmosphere having neurotic pressure in which the ability of face with neurotic pressure is very important. Therefore, athletes and trainers try to adjust pressure and anxiety in a controllable level, in such a way that instead of hindering, it will help. One of the solutions of coping with anxiety is mental imagery and mental practice (5). Researches support idea that imagery can promote performance by different mechanisms (6). Researches results show that imagery has positive effects on different levels of performance. Short and Colleagues (2002) said that there are several quantified and qualified studies which indicate that continues usage of imagery by observing its rules is related to performance increase. Mental imagery not only affects moving performance and training skills but also has influence on self-confidence increase, attention, concentration, mental energy and anxiety deduction (7). Bahrami, Alireza (2008) in the book "Mental Practice Program of 3-score shot for basketball players", stated that people, based on standard mental imagery

questionnaires, who have high capacity in this field can do better self-tranquility (3). Bahrami, Alireza and Marishyk L.V (2004) and Bahrami (2006), in a research known as *Mental Imagery & Its Usage in Basketball Players' Exercises*, remark that by the fact that mental imagery is done in the right hemisphere and athletes do the self-tranquility process in this part, so there is a meaningful relation between mental imagery and self-tranquility and team solidarity.

Jennifer Cumming (2009) analyzes the effects of imagery workshop (*Mental Imagery Exercise*) on matches in basketball players. The results of her studies reveal that players increase the level of mental imagery significantly in 6 weeks and prove that mental imagery exercises can be useful and effective (8). Murphy Shane (1994), in his researches display meaningful results of number of successful free shots in games by using imagery (9). Short & Colleagues (2002), show that continuous use of imagery relates to performance promotion, self-confidence improvement, concentration and anxiety deduction (7). Callow, Hardy and Hall stated that using both internal and external imagery contribute to the efficiency of performance (10). Results presented by two analyzers, Kayley and colleagues (1994), showed that mental imagery has positive effects on performance but not as the much as physical exercise or mixture of physical exercise with mental imagery (11).

In addition, sport psychology major is generally focused on analyzing; motivation increase and personal performance in sport through group activities take. But team performance is not simply the collection of personal performance i.e. complex process of situational and inter-personal elements. So the psychologists should not ignore the fact that mental factors can influence team performance. In recent years researchers have confirmed the effects of psychological factors on successful team performance (12). Structure of collective efficacy mentions common beliefs including: understanding of sufficiency, eligibility in group activities and attention to available sources of efficacy in group and reflecting group, situational or behavioral duties (13). Collective efficacy can be the production of the harmonized mutual effect among group members (13 & 14). Bandura (1968), suggested that collective efficacy is a developed status of the efficacy, itself and assumed that collective efficacy is a collection of personal efficacy levels in group level (14). Collective efficacy beliefs are important reasons for try, endeavor and collective performance, especially for duties which need mutual effect among group members to reach success, therefore; that is a significant factor in team sports because it can affect collective efficacy and their resistance in difficult or failure situations and is a feature of successful teams (13).

Many of sport psychologists show that team efficacy has positive influences on sport performance. The main and important aspect of collective efficacy is common beliefs in team, the ability of being match among group members and efficacy sources to reach success (15).

Kozub and McDonnell (2000), analyzed the relation between collective efficacy and group solidarity in rugby teams. Results of multiple regression indicated that there is a meaningful relation between collective efficacy scores and group solidarity (16). The research, done by Feltz and Albert (1992), about collective efficacy and group performance, show that collective efficacy beliefs are strong predictors of team performance in proportion to efficacy itself. It is also understood that collective efficacy beliefs affects performance more than efficacy itself (17). Myers & Colleagues (2004), surveyed the relation between collective efficacy and team performance in one of American-Football team and the results show that there is a mutual relation between collective efficacy and performance (18).

But the researches about synthetic analyzing of these two variables are rare. Krista & Hall (2005), analyzed collective efficacy increase of a football team through motivational public skillfulness imagery. The results showed that athletes collective efficacy through mental imagery increases in both of practice and competition (19). Another research, Shearer and Colleagues (2010), surveyed the effect of imagery on collective efficacy of basketball team, having wheelchair, through video tape. The results showed that potential mechanisms, through imagery, first influence performance understandings then collective efficacy (21). The necessity of survey about relation between imagery and collective efficacy in the country has not been done. Also analyzing and understanding group sport players' imagery level which can in-

crease auto-efficacy and collective efficacy that finally lead to team performance increase and encourage the athletes using imagery more, help the trainers encourage the players doing imagery in exercise and competition. As said before, imagery and its relation with performance have been studied in different researches. According to introduction and necessity of research, purpose of this research is to survey the relation between mental imagery and collective efficacy of athletes in group sports.

Research methodology. This research method is descriptive – correlation and causal – comparative. The researcher is going to determine the level of sport imagery, collective efficacy and the relation of above factors regarding probable differences due to sport fields and the gender of athletes. Statistical community selected 92 persons including 46 women and 46 men from Markazi Province handball, futsal, Basketball and volleyball teams and they became the objects of the research.

Data Gathering Method & Tool. Personal data questionnaire gathered information of age, sex, sport records and field of the athletes. Sport mental imagery questionnaire is designed by Hall and his colleagues in 1998 for measuring of imagery operation in sport. This questionnaire is according to likert 7-score scale (rarely=1 to often=7) which includes 30 questions and is formulated from small scales such as A) mental special imagery (MS), B) motivation general competence mental imagery (MG-M), C) animation –general motivation mental imagery (MG-A), D) special cognitive mental imagery (CS) and E) general cognitive mental imagery (CG). The Justifiability and credit of the questionnaire is reported 68% to 90 % by Hall and his colleagues (1). Collective efficacy questionnaire is one that Short and his colleague designed in 2004 which evaluates collective efficacy. It includes 20 questions which are based on Likert 10-score scale (I'm not sure=1 and to I'm not completely sure) and being formed of small scales such as ability, effort & try, resistance and union. The Justifiability and credit of the questionnaire is reported 83% to 86 % by Short and his colleague in 2004 (6). For gathering and classifying the data resulted from this research, the first statistical method was descriptive including central tendency and dispersion and then the perceptive method such as Pearson Correlation coefficient and T-test. For all statistical operations version 18 of SPSS statistical Tool was used.

Research results. For surveying the relation between variables of mental imagery and collective efficacy in female and male athletes, Pearson Correlation Test was used. The result of table 1 shows that there is a meaningful relation between imagery and collective efficacy with measure of $r=0.548$ and meaning level of $\alpha=0.01$ which means there is a linear relation between them. How much the imagery increases or decreases, to that extent team sport efficiency also will increase or decrease.

Table 1

Correlation between imaging and efficiency of the test team

Variables	Team efficiency	
Mental imagery	Correlation coefficient	0.548
	p-value	0.000

$P < 0.01$

For comparison and evaluation of measurement mental imagery of men & women T-Test was used. According to the data of table 2, it was considered that the measure of motivation mental special imagery for women was (28.70 ± 5.56) but this measure for men was (29.20 ± 5.20) . By observation of the result of T test, groups' average difference at the level of mean taking of 0.05 does not have meaning, on the other hand, the measure of motivation special mental imagery is equal for men and women. Also study of other scales shows that there is no difference between mental special imagery (MS), B) motivation general competence mental imagery (MG-M), C) animation –general motivation mental imagery (MG-A), D) special cognitive mental imagery (CS) and E) general cognitive mental imagery (CG) for women and men ($p > 0.05$) and also it is seen sport imagery for women is (143.01 ± 25.52) and for men (146.95 ± 15.32) so according to T-Test we conclude that sport imagery of men in proportion to women is of no significant difference ($P=0.46 > 0.05$).

Table 2

Comparison of male and female Athlete of the mental imagery

Gender		Mean	Standard deviation	Statistics T	p-value
Mental picture of the specific motivation	woman	28.70	5.56	-1.39	0.15
	man	29.98	5.20		
Imaging of general mental competence motivation	woman	28.89	5.76	0.159	0.86
	man	28.61	3.99		
Imaging subjective arousal-general	woman	28.30	5.35	0.038	0.92
	man	28.26	3.18		
Mental images of specific cognitive	woman	28.52	5.52	-0.78	0.41
	man	28.98	4.01		
Imaging of subjective cognitive	woman	27.98	6.56	-0.92	0.34
	man	29.35	4.55		
Imaging mental exercise	woman	143.01	25.52	-0.73	0.46
	man	146.95	15.32		

Collective efficacy measure was calculated by T-test. As it is observed in table 3, measure of small score of ability for men is (30.85±5.98) and for women (26.98±5.89). With observing T-Test results, the difference of groups is significant. On the other hand measure of ability small scale for men is more than for women. Also other small scales show that between small scales of preparedness, effort & try and resistance for men and women there is no difference ($P > 0.05$) but union scale for men is more than women ($P < 0.05$). Totally it is observed, the efficacy measure for women is (126.12±26.95) and for men (139.08±19.82). The comparison of these measures according to T-Test shows collective efficacy for men is more than for women ($p=0.020$).

Table 3

Comparison of performance in male and female athletes

Gender		Mean	Standard deviation	Statistics T	p-value
Ability subscale	woman	26.98	5.89	-2.65	0.007
	man	30.85	5.98		
fitness subscale	woman	27.45	7.20	-1.80	0.063
	man	29.94	4.89		
Effort subscale	woman	19.10	3.98	-0.62	0.501
	man	19.41	2.87		
Strength subscale	woman	26.01	6.40	-1.32	0.149
	man	27.12	5.42		
Alliance subscale	woman	25.98	6.60	-2.49	0.011
	man	29.25	5.39		
Team performance	woman	126.12	26.95	-2.30	0.020
	man	139.08	19.82		

Table 4 shows study of relation between imagery and collective efficacy for female athletes which shows a favorite linear relation about $r=0.665$ and at level of mean making 0.01 between these two variables so that for women mental imagery has significant effect on increase and decrease of collective efficacy.

So according to the result obtained, it is observed that measure of relation between imagery and collective efficacy for female athletes is more than the measure of relation between imagery and collective efficacy for male athletes.

Table 4

Correlation between imagery and efficiency of the test team of female athletes

variables		Team efficiency
Mental imagery	Correlation coefficient	0.665
	p-value	0.000

 $P < 0.01$

Table 5

Testing the relationship between illustration and efficiency of a team of male athletes

variables		Team efficiency
Mental imagery	Correlation coefficient	0.39
	p-value	0.006

 $P < 0.01$

Discussion & Result. The goal of the research is the study of relation between imagery and collective efficacy for male and female athletes in the field of volleyball, futsal, Basketball and handball in Markazi province.

The result of study of relation between imagery and collective efficacy in athletes showed that there is a obvious relation between these two variables. This relation indicates that the imagery can have influence on self-efficacy beliefs of athletes .The result of this research together with the results of other researchers such as Bandura in 1997 showed collective efficacy is formulated from concepts of self-efficacy that can lead to increase of collective efficacy and improvement of athletes' performance (13, 14). Also it is the same as result of research of Krista J. & Hall R. in 2005 that showed athletes' collective efficacy through imagery increased for both two statuses and conditions of exercise and competition (19). The result of the survey of David A & Colleagues as well as this research showed imagery by video tapes has effect on collective efficacy (20, 21). Also Bahrami and Colleagues in 2007 concluded mental imagery in process of basketball athletes' exercise has effect on collective efficacy (22). Nari-mani and his colleague in 2006 also found a significant relation between imager, self efficacy and its impact on function.

The study of the imagery measure on male and female athletes showed that there is no significant difference between them in this cognitive skill. But the effect of motivation special mental imagery for male athletes is a little more than for women and this subject matter can be analyzed in this way that male athletes precede women in imagery special goals like imagery of a victory in a sport competition and this lead to their succeed and function improvement .

The comparison of the athletes' collective efficacy in this research showed that its effect on male athletes is more than women athletes and we can conclude from this research male athletes beliefs from group ability for doing a special action and succeed in a duty is more than women, so because the collective efficacy will lead to group correlation between every single member of the team thereto it also leads to increase of team function and success. These results like the result of the research of Ramezanizadeh and colleagues in 2009 in which the relation of collective efficacy, group correlation and collective performance on professional volleyball players studied, showed between these three variables there is a significant relation. It is the same as the result of the researches of Hodges & colleagues in 1992, Carron & colleagues in 1998, Kayley D & colleagues in 2001 ,Jennifer Cumming & colleagues in 2003 and Myers & colleagues 2004 about the relation of collective efficacy with group function and performance. So it is suggested the coaches of handball, futsal, Basketball and volleyball fields use mental imagery with the goal of self efficacy, collective efficacy & correlation and function improvement.

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Annotation. The purpose is analyzing of Relation between mental imagery and athletes' collective efficacy in group sports. Population, 48 male and 48 female players of Futsal, Basketball, Volleyball and Handball of Markazi province were selected. Data gathering tool, personal information questionnaire, mental imagery questionnaire, Hall and Colleagues (1998), Company Efficiency Questionnaire, Short & Colleagues (2004), were used. Statistical method, Pearson Correlation Test, and T-test, were used and data analyzing done by statistical software SPSS, version 18. Research result, there is a relation between mental imagery and athletes' collective efficacy ($r=0.58$). Mental imagery level comparison between male and female athletes, according to T-test, has no difference between the genders but athletes't collective efficacy level comparison between male and female athletes, shows that males have more collective efficacy. There was a significant difference ($p=0.006$) between these two variables in male and female athletes.

Key words: athletes, imagery, collective efficacy.