# A Comparison of Different Functions of Sport Imagery Based on the Experience Level and the Player's Position among Female Basketball Players of League One in Iran Universities

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**Abstract:** Mental imagery is an effective psychological skill in the field of sport psychology and motor behavior. Although experts have the same idea about the effectiveness of this kind of exercises, but there are obvious deficiencies in its application. In addition to skill level, which is considered as an effective factor on performance, player's position in team sports including Basketball require special adeptness for implementation of the skill. Therefore, the aim of the present study is to compare different functions of sports imagery based on the experience level and the player's position among female Basketball players of league one in Iran universities. All participants (n=25; mean age: 22±2.8, high 174±6.1 and weight 58.9± 10.3) who were playing in Iran's League One of Basketball, filled in Movement imagery (1997) and Hall & Martin sport imagery (1998) questionnaires. The subjects were divided into 5 groups according to their level of experience and.regard to the average scores retained from different groups were compared with each other ($\alpha = 0.05$). The results based on one way analysis of variance (ANOVA) indicated a significant difference between groups on the basis of experience level and also the LSD Post Hoc Test indicated that the players who were university students had less ability in sport imagery than the ones in league one and super league. It was also found that there is no significant relationship between players' position and their ability in sport imagery. The results indicated that by the increase of experience level, athletes' ability in sports imagery will increase too and it can be regarded as an effective factor. This may be due to the transformation from non-automated performance level to automated performance level. So in information processing system the athlete has the capacity to improve her ability in noticing effective cognitive and mental aspects in performance and by this she can lead to a better imagery than the more experienced individuals. Why players' position does not have any influence on sports imagery is probably because of the lack of especial physical and mental exercises for each position.

**Key words:** Sport Imagery · Mental Imagery · Experience Level · Player's Position · Motivational General Mastery · Super League

## INTRODUCTION

According to Richardson [1], mental imagery is both a quasi-intuitive knowledge and a quasi-perceptual experience in the absence of an actual stimulus. Nicholas [2] believes that mental imagery is an appropriate mental tool which effects skill development, stimulus and confidence. Motor imagery (MI) is the process of mentally rehearsing a motor act without over body movement [3]. From the above mentioned definitions, it can be concluded that the close relationship between body, mind and excitement and their impact on each other and on sports performance is a topic of interest for experts in sport psychology [4].

Some studies showed that activating similar neural paths, during physical and mental performances, is a skill. If the skill is visualized vividly and with a more real feel, it will be accomplished more effectively in real world [5]. Watt, Spittle and Morris [6], defined imagery as the manner in which people imagine themselves in ways that can lead them to learning and developing skills and can also facilitate performance of those skills. This skill can

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even influence the mobility in older ages. Hosseini [7] studied the effect of imagery exercise on the balance of 120 old-age Iranian individuals that were categorized into 4 groups. The balance test showed that the physical training and the combined groups are better than mental training and control groups respectively.

Nowadays mental imagery exercises involve less than ten percent of training program of professional athletes and between zero to five percent of nonprofessional ones. The benefits of using this type of exercise are learning skills, injury treatment, performance review, increase of confidence, motivating players, promotion of positivity and arousal level control [8]. In this regard, Khaled [9], suggested that the concept of imagery can be used in many different contexts. Sport imagery can be defined as using all senses to re-create or create a sport experience in the mind with the goal of enhancing sport performance during training and competition [10,11].

This psychological skill, according to Pavio's [12], analytical framework of the function of imagery, has two cognitive and motivational functions in both general and specific levels. The cognitive specific function is related to exercise and the review of a motional skill while the cognitive general function is related to exercise of the game strategies. On the other hand the motivational specific function of imagery is related to the visualization of particular goals and targeted actions and the motivational general function, which has the mastery and arousal sub-levels, is related to confidence acquisition, mental strength, positivity, concentration and comfort acquisition. In this regard, Martin *et al* [13], expressed a conceptual model about the effects of imagery on performance boost and designed a questionnaire for evaluating sport imagery.

VaezMousavi & Rostami [14], studied the effect of motivational and cognitive imagery along with physical exercise on performance and learning the skill of Basketball free throw among 78 female students of Shiraz (Iran) University of Medical Sciences. These subjects had no history in Basketball and they were analyzed over 18 sessions. The results showed that the cognitive imagery exercise has an advantage over the other methods. Alikhani & VaezMousavi [15], studied the effect of aforementioned programs on the chosen reaction time among 45 university students over 14 sessions. The imagery groups, regardless of the kind of imagery, achieved better grades.

The studies of sport imagery functions, especially among elite athletes, have never been seriously pursued in Iran. Therefore, it seems that these studies are in their first steps. In an unpublished study, conducted by Rostami *et al*, it was indicated that by an increase in age, the motivational imagery functions will be decreased. Because of the lack of coherent studies on Iranian athletes, most often the results of the studies done by other researchers will be referred to. Barr & Hall [16], compared the effect of motivational specific imagery on older rowers against the younger ones. Regarding the skill level, Salmon *et al* [17], reported that the use of motivational and cognitive functions is more common amongst the elite American Football players than the ones who play just for fun. The results of Hall *et al* [18,19] studies, which studied the motivational and cognitive function of imagery according to the level of learning skills, indicated that the beginners use the cognitive imagery functions more often than the elite ones. Munroe-Chandler *et al* [20], observed the increase of the efficiency of football players in forward, halfback and defense positions by the use of a motivational general mastery imagery program. Nordin & Cumming [21], in an interview which aimed at where, when, what, why and how in the use of imagery amongst rhythmic professional athletes, found out that it is important to pay close attention to individual differences in their answers.

Feltz & Landers [22], considers the nature of the cognitive task, Hall [23], considers the higher level of skill and Issac [24], considers higher imagery ability as the effective factors in imagery. According to Gregg, Hall and Nederhof, [25], "the better imager an athlete is, the more effective that imagery will be in aiding his or her performance or skill acquisition". Robin *et al* [26], demonstrated that individuals with higher imagery ability experienced greater improvement in the accuracy of their tennis serve return compared with poorer imagers.

Basketball is a team sport which with some skills like different types of shooting, passing, dribbling and also various tactics has attracted many young people, especially the university students [27]. In most of the developed countries, this sport has received an special attention and many studies have been conducted to increase the efficiency of athletes. Generally Basketball coaches believe that this sport has many positive psychological effects like: emotional balance, good motivation, emotions adjustment, reducing mental abnormalities, strengthening the desired psychological

factors like self-confidence, concentration and attention, nurturing intelligence and mental capacity, balancing the character, acquiring joy and happiness and developing the ability to deal with problems. Obviously, Basketball will bring social, mental and health-related benefits to its participants [28,29].

In championship, there are several factors that can lead athletes to skillful performance: mental skills are a part of internal factors which affect the athletic performance. Imagery is one of them. These similarities provide a rationale for the use of MI practice as a complement to physical practice to improve motor performance [29-33]. It should be noted that both Hall's notion [23] of skill level and Issac's notion [24] of imagery clarity, affected this study. In this regard the main objective of this study is to comparison of different functions of sport imagery based on the experience level and the player's position among female Basketball players of league one in Iran universities. The secondary objectives includes: a) determining the difference in athletic and mental imagery according to the academic major, university and age, b) examining the relationship between sport imagery variables, mental imagery, game history, height, weight and university entrance year, c) and finally determining the differences in sport imagery according to the mental imagery clarity.

## MATERIALS AND METHODS

**Subjects:** 52 female university students (mean age: 22±2.8, high 174±6.1 and weight 58.9± 10.3), who were playing Basketball in Iran's Group One level, participated in this study.

**Instrument:** The tools used in this study include: demographic questionnaire, Hall & Martin (1997) Movement Imagery Questionnaire and Hall & Martin (1998) Sport Imagery Questionnaire. Movement Imagery Questionnaire consisted of eight questions and Sport Imagery Questionnaire consisted of thirty questions. The participants answered the questions of a seven-point Likert scale which ranged from strongly disagree to strongly agree.

**Methodology:** At first, the subjects were divided into different groups based on their skill level and their game position and according to the information received through the demographic questionnaire. Skill levels consisted of 5 different groups, 1) university level 2) club level 3) Group One level 4) National level 5) premier League level. Game position also consisted of 5 different

playing areas, 1) Point Guard 2) Small Guard 3) Small Forward 4) Power Forward 5) Post. After that they filled in Imagery Questionnaire just before the Hall & Martin (1998) Sport Imagery Questionnaire. Finally the information obtained from the questionnaires was used to examine the objectives of the study.

**Data Analysis:** Descriptive statistics was used to determine the mean, standard deviation and to create charts and tables. One Way Analysis of Variance (ANOVA) test, T-test, Pearson and Spearman correlation coefficients were used to analyze the data. In the present study, a significant level of 0.05 was considered. All statistical analysis was performed using SPSS.16 software.

## RESULT

Demographic characteristics of the subjects such as age, length and weight of the subjects are presented in Table 1.

Table 2 shows the results of mental imagery, sport imagery and subscales of sport imagery. By observing the sport imagery subscales mean, it can be seen that motivational general mastery imagery and cognitive general imagery subscales have the highest and lowest amount of mean respectively.

Table 3 illustrates the results of One-Way ANOVA on sport imagery according to experience level. As noted in the table, the imagery ability has a significant difference between different groups according to their skill levels. The results of LSD Test, which was conducted to identify the difference, indicated that the imagery scores of athletes who were university students are lower than the ones in League One and Super League.

In Fig.1, the results of sport imagery subscales have been summarized and presented based on their game position. By looking at the chart it can be concluded that the point guard players have the highest amount of mean amongst all sport and mental imagery variables and their subscales. Nevertheless, ANOVA didn't show any significant difference between the game position of the players and their ability in imagery.

The correlation between mental imagery, Sport imagery and its subscales are presented at Table 4. As table 4 shows, mental imagery ability is correlated with overall score of sport imagery and motivational general mastery subscales and cognitive specific imagery.

Because of the age data didn't have a normal distribution, Spearman Correlation Coefficient was used. Table 5 represents the relationship between age, mental imagery, sport imagery and their subscales.

Table 1: Mean and Standard deviation of Age, Length and Weight

|  | Age | Length | Weight |
|---|---|---|---|
| Mean | 22 | 167.4 | 59.4 |
| Standard deviation | 2.8 | 6.1 | 10.3 |

Table 2: Mean and Standard deviation of Mental imagery, Sport imagery and its subscales

|  | Mental imagery | Sport imagery | Cognitive specific | Cognitive general | Motivational Specific | Motivational general mastery imagery | Motivational general arousal |
|---|---|---|---|---|---|---|---|
| Mean | 51.6 | 144.9 | 25.6 | 23.7 | 32.9 | 35 | 27.6 |
| Standard deviation | 3.1 | 18.4 | 4.1 | 3.9 | 6.5 | 5 | 5.7 |

Table 3: The results of one-way ANOVA in sport imagery depending on the level of experience

|  | Sum of Squares | df | Mean Square | F | Sig |
|---|---|---|---|---|---|
| Between Groups | 3519.975 | 4 | 879.994 | 3.022 | 0.027 |
| Within Groups | 13684.544 | 47 | 291.161 |  |  |
| Total | 17204.519 | 51 |  |  |  |

* Significant level=0.05

Table 4: Pearson correlation coefficient between Mental imagery, Sport imagery and its subscales

| Variable | r | p |
|---|---|---|
| Mental imagery and Sport imagery in total | 0.36 | 0.008* |
| Mental imagery and motivational cognitive general imagery | 0.43 | 0.001* |
| Mental imagery and cognitive specific imagery | 0.42 | 0.002* |
| Mental imagery and cognitive general imagery | 0.3 | 0.031* |

* Significant level=0.05

Table 5: Spearman Correlation Coefficient between Age, Mental imagery, sport imagery and its subscales

| Variable | r | P |
|---|---|---|
| Age and Mental imagery | 0.29 | 0.039* |
| Age and Motivational cognitive general | 0.3 | 0.031* |

* Significant level=0.05

Table 6: Independent T-test according to clarity of mental imagery in subscales of sport imagery

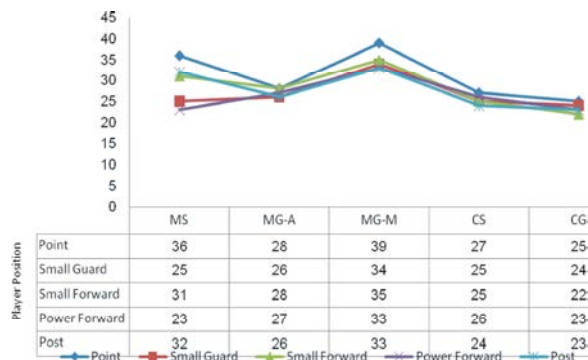| Variable | t | P |
|---|---|---|
| Motivational general mastery imagery | -2.03 | 0.047* |

* Significant level=0.05



Fig. 1: The results of sport imagery subscales have been summarized and presented based on the subject's game position

Table 5 shows that there is a correlation between age and mental imagery ability and motivational general mastery subscale sport imagery. This means that by the increase of age, an increase will be observed in aforementioned factors.

In order to identify the effect of the clarity of imagery, the subjects were divided into two groups (good and excellent). T-test indicates that there is a difference of motivational general mastery imagery between the two groups. The results are presented in Table 6.

Table 6 shows the effect of clarity of mental imagery on motivational general mastery subscale in comparison to other subscales.

**DISCUSSION**

The main objective of this study is a comparison of different functions of sport imagery based on the experience level and the player's position among female Basketball players of league one in Iran universities. The secondary objectives include: a) determining the difference in sports and mental imagery according to the academic major, university and age, b) examining the relationship between sport imagery variables, mental imagery, game history, height, weight, c) and finally determining different forms of sport imagery according to the mental imagery clarity.

The researchers assumed that probably there will be differences among the usage of imagery functions in each game position. This means that guard players (1,2) probably have more ability in sport and mental imagery, specially the cognitive general one because they are in an specific game position. By comparing the means it became cleared that the point guard players had the first position

in all variables. But in other factors the mean was distributed among players differently. Despite these differences, statistical test showed that there is not any significant difference between player's position and their use of imagery functions.

In connection with another main objective of this study, which was the relationship between skill level (athlete's membership in college, club, league one, national and super league teams) and imagery ability, statistical test indicated a significant difference. This means that in general, sport imagery ability and motivational general mastery imagery (a subscale of sport imagery) are higher in super league, national and group-one players than the ones who had merely participated in college competitions. These findings support the findings of VaezMousavi & Rostami [14], Alikhani & vaezMousavi [15], Barr & Hall [16], Salmon *et al* [17], Hall *et al* [18] and Munro *et al* [20]. In aforementioned studies the effectiveness of mental imagery in general and the use of the function of cognitive imagery in lower levels of skill and the function of motivational imagery in higher levels of skill have been demonstrated. The reason is probably because of the automatic run which provides the opportunity to pay attention to mental affairs. Another possibility is that the more physical exercise, which naturally is accompanied by exercise excitement, will provide this opportunity for more skilled people to have more mental exercise.

The courses of education (Engineering and Humanities) didn't show any differences in imagery. Moreover, no change was observed by the change of university place, this means that the change of college place cannot lead to better imagery ability in athletes. In this case, being an all-female university distinguishes this university from the other ones. This means that studying in an all-female university is not an advantage for imagery ability.

After determining the relationship between age and imagery variables, the results indicated that age has a connection with mental imagery variable and motivational general mastery imagery. This means that by the increase of age, these two mental skills will increase too. Hosseini [7] studies showed that even by the increase of age, mental imagery can be effective on the performance of a balance skill. But in relation to the functions of sport imagery, the results of this study is against the results of Rostami *et al* studies (unpublished) on paralyzed Basketball players, which reported that by the increase of age the use of the functions of motivational functions will decrease. But it consistent with the finding of Barr & Hall [16], which concluded that the use of motivational imagery is more common in old rowers than the young ones and Hall *et al* [18], who studied the use of cognitive imagery function in the beginner and the advanced groups.

In the study of the relationship between the weight and height anthropometric factors and the imagery functions no correlation was found. But a significant positive correlation was seen between mental imagery and sport imagery, motivational general mastery, cognitive specific and cognitive general. This finding consistent with the findings of Issac [24], Gregg, Hall and Nederhof [25] and Robin *et al* [26]. This means that the increase of these abilities will result in an increase in sport imagery. Issac [24], considers higher ability in imagery as a factor, which influences the effectiveness of imagery. In this regards, in this study the subjects were divided into two groups: the ones with a clear imagination and the ones with a less clear imagination than the first group. Statistical test indicated that there was a significant difference between two groups, meaning that the excellent group had a better ability in motivational general mastery imagery than the other group. This indicates that clarity is a major factor in motivational imagery.

Conclusion: According to the results it was found that the game position is not an effective factor in sport imagery ability, on the other hand it can be expected that a higher level of experience is an effective factor in imagery ability. Also according to the study results, it was found that probably it is more difficult for younger participants to have mental imagery and motivational general mastery imagery. So, trainers should note that this ability in younger players needs more attention and more special psychological exercises like imagery.

It is suggested that comprehensive studies be conducted on the functions of sport imagery among both male and female basketball players with different ages and level of experience, so that both trainers and players of this field can improve their vision in order to achieve a higher level of performance.

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