Comparison of mental and physical practice on acquisition and retention of long service in Badminton

[1]Mir Hamid Salehian, [2]FatemehSadat Hosseini
[1]Department of Physical Education, College of Humanity and Educational Sciences, Tabriz branch, Islamic Azad University, Tabriz, Iran
[2]PHD, Department of Physical Education and Sport Sciences, Urmia University, Urmia, Iran
***Corresponding author:** Mir Hamid Salehian*
Mh_salehian@yahoo.com

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Abstract: *The purpose of this research was to compare mental and physical practice on acquisition and retention tests of long service in Badminton, 30 inexperienced university boys' students were selected accidentally by using a revised questionnaire of motor picture-making of Hall and Martin. They were divided into 2 groups; an experimental group and a control one. Group one carried out the whole practice sessions practically. Group two carried out the whole sessions regarding to the mental practice being achieved as internal imagery. The results showed that the mental practices have significant impact on retention and transfer of long service in Badminton.*

Key Words: *mental, physical, practice, acquisition, retention*

1. Introduction

In spite of the mental exercises discovery and its effective methods in developing and recovering the motor learning, the new findings are being represented in this relation and various approaches of mental practices have been still developing in this regard. The carried out studies of the recent decades have shown that the mental practice is very similar to the practical exercise leading to the progression of motor skills in this pavement (Felts and Landers, 1983). In the other hand, they specified that the mechanisms being participated in learning process with high intensity physical exercise become more active during the mental practice (Bonnet et al, 1997). Some researchers such as Yaguez (1998) have shown that the mental practice is as effective as the practical practice in learning of motor skills. But another group emphasized that the role of mental practice in motor learning is lower than practical exercise (Jackson et al, 2004). Some other researchers believe that the mental practice does not influence on the motor learning (Malder et al, 2004). In this relation, Hall (1992) believes that the lack of mental practice impact on motor learning is coming from the fulfillment of wrong mental practice. He also believes that a wrong imagination of doing an activity for the positive impacts can make negative consequences. The picture-making action is that the person's actions will be planned in a serious way of the actions. The frequency of the motor actions should be totally recognized before responding to the physical need (Vineberg et al, 2003). An interruption being achieved by a gymnast during the jumping is a good instance of the related theory. The interruption time is different than the type of jump; the jumper is reviewing his mind before the action of jumping trying to select the best time of the related jump. In relation to the benefit of the picture-making issue, there have been many different agreements but they are mostly suspicious in this regard. Hence, the mental picture-making issue is a complete brain cognitive affair having an intriguing role in increasing of the muscles' power in this path (Gabriel et al, 1989). The experimental documents have been shown in relation to mental picture-making affairs regarding to basketball, volleyball, football and tennis. Also, there have been carried out some researches about the influence of the mental picture-making practices to facilitate the rate of learning of sport and motor skills; however, the application of the related process has not been recognized in sport skills yet. Thus, the present study is to evaluate the practical practices and mental practices as an internal picture-making case being achieved on the Badminton long service skill and performance. This study tries to respond the question whether the function of long service of Badminton can be achieved in a group-based case or no? And is there any significant difference between these related groups? Can it be recommended to the coaches? Gordon and Vinberg (1994) showed that there is no significant difference between both groups using internal and external picture-making issues. Deriskll et al (1994) also showed that the mental practice had a positive influence on the performance but its benefit had also long distance during the mental practice due to the related intervention in this regard. Sanders et al (2004) showed that the physical and mental

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practices are similar together. However, the application of practice method should be followed with mental practice along with the same physical practice potentially. It also is a very expensive method in teaching. Gardner and Mur (2006) stated that the mega-analysis supports of the mental picture-making impact are still an intriguing case. But, some researchers (Jones, Stewart, 1997) do not agree with the application of picture-making for the help of achieving a reliable action (Sikalik et al, 2006). Letswart et al (2011) in a research carried out on the recovery of 39 heart failure patients using mental practice with picture-making concluded that the mental practice does not have a significant impact on the heart failure patients and their recovery. Page et al (2011) in a study carried out on the upper limbs motor actions using long impact of mental practices among heart failure patients showed that the mental practices has an impact on treating the related motor actions. Braun et al (2011) in a study regarding to the evaluation of mental practice in patients with heart failure concluded that the mental practices can recover and progress among the related patients.

2. Materials and methods

Due to the nature of the research subject, it is a semi-experimental research. This research included two experimental groups as following:

1- *Group one carried out the whole practice sessions practically*
2- *Group two carried out the whole sessions regarding to the mental practice being achieved as internal picture-making*

After the arrangement of the related groups, retention and transfer were carried out in order to assess the status of the entire subjects in before and after practice times.

Data collection instrument:
The questionnaire of MIQR and personal background (age, height and weight), medical history (background of pain, surgery, pain in shoulders and elbow, wrist and damage in the related muscles regarding to grasping and neurological and muscular diseases) and the sport history were applied in the study.

Statistical community, volume of the sample, sampling method and data analysis method:
The statistical sample of the present study is based on Edenski table of three percent by the number of 360 boy students of Tabriz Azad University and total number of 12000 ones were selected in the study. Also, the whole subjects were right-handed; the whole participants completed the related questionnaires as well as their sport background in this path. In the next step the ability of picture-making of the whole people using a revised questionnaire of motor picture-making of Hall and Martin (1997) were also evaluated that the whole boy participants were also accidentally divided into two groups of practical (15 ones) and mental (15 ones).

Data collection instrument and method:
After the early selection of the statistical sample, in the first step the ability of picture-making of the whole people using MIQR questionnaire was evaluated. People without the related ability were eliminated from the sample; also, due to the skill being considered as the criteria of the study, the personal traits of the people were also eliminated from the sample because of their skill. After complete specifying and displaying of the Badminton long service skill as well as early explanation, the pre test of Badminton long service was considered as the criteria of the study. This also includes 10 Badminton long services based on AAPHRED test and the score of the subjects was registered in 10 struggles. In continue, due to the necessary trainings, the related group will achieve the skill criteria for four weeks including three sessions by the number of 30 iterations. For the reason, practical group achieves their practices as practically; the mental group will achieve their actions as internal picture-making and the whole participants were asked to complete the related actions as internal showing their excitements practically as if they play in a real Badminton court. In the end of the week, the related criteria skill was evaluated in order to check the function in this case. In the end of the fourth week, a similar pre test was achieved. Three days later of the last practice, acquisition test, a day after a retention test and a week later a transfer test was completed and the score of the subjects were registered in a list.

Statistical method:
Due to the consideration of the parametric statistical hypotheses, the inaugurating comparison method was applied in relation to the impact of the mental practices on the boy groups. In the inaugurating acquisition step the pre tests scores were obtained and in learning step the inaugurating scores of acquisition and learning were also governed and in continue, the scores of the mental and practical practices group were obtained using T independent test being compared between the related groups in

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p<-0.05 level. The software SPSS206 was also used to calculate the raw data in the related study.

3. Results

Table 1: descriptive statistical indices regarding to mental practice and practical practice in various steps of pre- test, acquisition and retention tests

Statistical indices / groups		*No*	*Mean*	*Std deviation*	*Mean std error*
Practical practice group	*Pre test*	*30*	*7.76*	*2.58*	*0.47*
	Acquisition test	*30*	*10.76*	*2.51*	*0.45*
	Remembering test	*30*	*11.86*	*2.59*	*0.47*
Mental practice group	*Pre test*	*30*	*6.10*	*2.05*	*0.37*
	Acquisition test	*30*	*9.76*	*2.69*	*0.49*
	Remembering test	*30*	*10.20*	*2.77*	*0.5*

Table 1 represents the mean comparison of pre test, acquisition test of Badminton long service scores in both groups of control and mental practice. As it shown, the results show that the mental practices have significant impact on the acquisition of subjects Badminton long service (p<0.01).

Table 2: results of mental practices significance on the retention of Badminton long service of participants

Statistical indices / groups	*No*	*Mean*	*Std deviation*	*DF*	*Statistics*	*p-value*
Mental practice	*30*	*0.43*	*2.44*	*58*	*1.147*	*0.256*
Practical practice	***30***	***1.1***	***2.04***			

4. Discussion and conclusion

As it shown in findings of the research, the mental practices have significant impact on the acquisition of Badminton long service of the under study people with control group. In other words, in addition to the practical practices, it is expected that it can be effective on the motor skills learning process. The mental practice can be progressive on the subjects' acquisition criteria skill elements. There have been many various researches that have confirmed the related study. Yaguez et al (1998), Coming and Hall (2002), Hill et al (2003), Sanders et al (2004), Yadollahzadeh (2006) confirmed the present study results potentially. In other researches, it is shown that the mental practice can progress the motor learning skills. However, there have been other studies that they have also shown that the mental practice does not have an impact on the motor skills. Malder et al (2004) in a report stated that the mental practice does not make any new actions on the motor performance. In addition, Jackson et al (2004) in the study of effectiveness of mental and practical practices concluded that the mental practice does not enough impact on the performance of the under study people.

Malder et al (2004) in their studies found that the mental practice does not have an impact on a new task on motor learning. In turn, in the rejection of Rowling et al, Vandal, he concluded that the mental practice has a equal impact on the skill of throwing disk. In relation to the made controversy, it can be pointed to the degree of learning impact through the mental practice in this field. The ability of picture-making is a great impact on the mental practice. The studies showed that people with low picture-making ability cannot progress in relation to their motor skill performance and vice versa. The practice duration is another effective factor in mental practice issue. As it shown before, the related factors can lead the mental practice to have many various impacts in motor skills. In this research, the external picture-making is used that some researchers have been confirmed it as well. This idea has been designed by Jacobsen and Shaw. They found that the external picture-making increases the muscular activity in compare to internal imagery issue. Due to these results, Epstein (1982) carried out a research in relation to the motor learning in internal picture-making case that the results were equal together wonderfully. Ferry (2003) in comparison of internal and external picture-making showed that the external picture-making has the highest impact in the motor patterns. It also is relied on timing and periodical arrangement. The internal picture-making is not roughly effective in motor skills. Since the mental practice is coming from the feedback of motor sensory deeply, hence the internal and external picture-making issues make higher levels because these types of picture-making affairs are coming along with higher motivational and muscular activities in this path. Ishi and Mashima (2004) in

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relation to the automatic system changes in picture-making of an activity showed that in internal picture-making the real-based event is closer than external picture-making provoking highly the same automatic system. As it shown, these results support the present study results fairly in this regard. However, this result is not completely supported in terms of its literature review. It seems logical that some combinative methods could be beneficent so that an athlete can feel of having enough benefits of the same method in this pavement (Vinberg, 2003). Another result represents that there is no significant difference between the scores of mental practice group and practical one in under study girls and boys; this research is coincident with the researches of Jacoline Sheik and Criedge. This result is not coincident with Dricell Copper (1994) in their studies specified that the application of picture-making has a significant impact on the performance (Hall et al, 1998). Indeed, the physical and mental practice combination is not better than only physical practice in an equal duration.

In the other hand, many studies led by Landers (2002) showed that the subjects practicing mental practice have lower recovery in compare to subjects in physical practice group. But in compare to the control group without having any practices showed better mental practice in this case (Landers, 2002). Twainig (1946) observed that the mental practice is effective in throwing but the physical practice had effective efficacy in this regard. Felts et al (1998) in a two mega-analysis studies carried out on the picture-making case concluded that the performance is appeared highly efficient in mental practice particularly in cognitive tasks in compare to motor tasks (Felts et al, 1998). In this research the motor skill (Badminton long service) is used that some of the results of the research were affected on the criteria skill. The experimentation of Ryan and Simon (1982) made another observation supporting the foundation of the effectiveness of mental practice case. The researchers concluded that if the mental practice is basically a cognitive issue, it should be effective in learning skills. For the hypothesis one, Ryan and Simon compared two cognitive and motor tasks and concluded that the mental practice had the highest influence on motor task. In other words, the mental practice having cognitive aspect is more efficient. In meta-analysis studies led by Felts (1983) and Drycell (1994), it is shown that the mental practice is very effective on the motor and cognitive actions but its effectiveness is higher on the cognitive activities learning process. In this research the novice subject was used in completing the criteria skill (Badminton long service) and some researchers believe that there is a reverse relationship between the experience level and mental practice effectiveness. Based on Drycell's research the effectiveness of the mental practice on novice people is leading to the high cognitive skills in compare to motor skills. Along this, Bohan et al (1999) showed that the mental practice has the highest impact in early steps (verbal-cognitive step) and there is a reverse relationship between the experience level and the effectiveness of mental practice. As it observed, the results of the studies support the effectiveness of the mental practice. However, some other research results do not support the same idea in this case so that Balayer et al (2013) in a study observed the impact of mental picture-making on the performance of skillful and novice football players equally. In another research led by Malder et al (2004) this hypothesis is fairly rejected because the researchers found that the mental practice does not have an impact on the learning of a new motor task. In turn, people having little familiarity with this case benefited of the mental and physical practices in this regard. Generally, the results of the research are coincident with the research hypotheses of Gabriel et al (1989) and Smith (1996). As it shown from the results of the present study, there is no significant difference between the acquisition scores and learning groups of mental and practical issues among boys and girls; the results of the research is coincident with the result of Jerilder's research. Ann Jerilder in 1991 comparing the mental practice on men and women found that the men and women benefit equally of their mental imaginations during a routine educational plan. Also, Ghaieni (1988) in Tehran University led a research titling the relationship between the motor readiness and mental readiness of teachers and sport coaches of Tehran University concluded that there is no observed a significant difference between the mental readiness of men and women.

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