Sports Scientists Views in
Indian Journal of Physical Education, Sports & Applied Sciences
Available Online
www.sportscientistsviews. com
Journal DOI-05-2016-44975451
I.J.P.E.S.A.S
Scientific Journal Impact Factor-5.684

INFLUENCE OF EFFICACY OF MOTOR IMAGERY OF TABLE TENNIS PLAYERS AMONG COLLEGE STUDENTS IN PHYSICAL FATIGUE

G. Sivamaran[1] & Dr S.V. Arun [2]

AFFILIATIONS:

1. Director of Physical Education, Mohamed Sathak College of Arts and Science, Sholinganallur, Chennai 600119 sivamaran.gp75@gmail.com Mobile-9944566348
2. Director of Physical Education, C.Kandaswami Naidu College for Men, Chennai 600102 gpsmphd@gmail.com

ABSTRACT

In table tennis, numerous studies have been conducted to assess aerobic and anaerobic capacities during an ecological exercise. The aim of the study is to evaluate the influence of motor imagery contributes to improved motor performance. Recent work showed that motor imagery might provide additional benefits by comparing both in pre test (Experiment 1) post test (Experiment 2). However the efficacy of motor imagery in different states of physical fatigue remains largely unknown, especially as mental imagery accuracy may be in a reduced amount by the physical fatigue. Stroke parameters are speed and accuracy of the ball as well as feelings of fatigue and force production capacity of the elbow flexors, knee extensors both in a fatigued state and non-fatigued state. Statically when comparing more than two sets of numerical data, a multiple group comparison test such as one-way analysis of variance (ANOVA) is used.Ball speed, ball placement and speed-ball placement index showed satisfactory reliability.The validity analyses fatigued players had higher scores of ball speed,ball placement, speed- ball placement index as well as made fewer errors than non-fatigued players. The decrease in accuracy was associated with an increased ball speed in the non fatigue condition and a decreased ball speed in the fatigue condition. These findings significantly influence table tennis performance and therefore coaches should take into account both the physical and mental state of table tennis players to optimize performance.

Key Words: Efficacy, Motor Imagery, Table tennis, Speed, Accuracy, Physical & Mental State.

1. INTRODUCTION

Table tennis is a complex and technically difficult game because the player must act quickly, accurately in changing conditions **(Pluta, et.al. 2020).** Table tennis is characterized by highly developed motor skills such as agility **(Zemkova & Hamar, 2015),** reaction speed time **(Ak & Koçak, 2010 & Bhabhor, et.al., 2013)** explosive power **(Zagatto, et.al. 2017)** and strength, eye movement and coordination **(Faber, et.al. 2014)**. Table tennis game skills include such traits as grip, attitude or playing position, types of punches and leg movements **(Bandi, 2004).**

In physiological terms, table tennis belongs to endurance and speed-based disciplines with changing modes of effort and intensity **(Bencke, et.al. 2002 & Chatterjee, Goswami, & Bandyopadhyay, 2016).** Performance in racket sports is multi-factorial and involves technical, tactical, psychological, and physiological skills. Thus, a lot of specific field tests have been proposed to evaluate these skills. No gold-standard test exists in table tennis to evaluate some technical parameters during a simple and ecological table tennis task. Both speed and accuracy of the ball were measured to evaluate the absolute sensitivity and reliability of the specific test. Both parameters are crucial in table tennis since the distance between players and the reaction time are short **(Pluta, et.al. 2020).**

Psychological assessment involves any systematic attempt at the measurement of psychological aspects related to players. Four major areas exist in psychological assessment clinical (assessments of an individual performance-related mental skill) special assessment topics (selection testing, polygraph testing and psycho-physiological assessment). Motor imagery is the mental representation of an action without physical execution of the corresponding movement. Experimental data provides ample evidence that motor imagery contributes to enhanced motor performance in both sporting and everyday life motor skills. Motor imagery further positively affects psychological factors involved in high-level sport performance like motivation and focus.

Imagery can be defined as a process by which sensory experiences are stored in the memory and internally recalled and performed without external stimuli **(Murphy, 1994).** There are two types of imaginary perspective: internal imaginary and external imaginary. Internal imagery requires an approximation of the real life phenomenology so that athletes actually imagine begin inside their bodies and experiencing those sensations that might be expected in the actual situation. The influence of imagery perspective may be more powerful in performance than in other areas because of the importance of kinesthetic awareness to sports performance. Thoughts, images and mental pattern act as the control mechanism that directs the body. Positive mental practice was a more effective learning procedure than negative mental practice. Negative thought is particularly effective for destroying skilled performance.

2. METHODOLOGY

2.1 Participants

Twelve professional male table tennis players age of 18 – 20 with training experience volunteered to participate in this test. All the subjects were members of the table tennis team at college level. All participants were right-handed. Motor imagery as a learning method employed throughout the training in fatigued state. All the participants learnt to concentrate clearly on the action and to imagine the same before accomplishing.

2.2 Instrumentation:

Motor imagery (MI) the mental simulation of an action without its actual execution is a promising technique to boost motor learning via physical practice in rehabilitation, sport and

educational fields. Motor imagery might promote the development of this ability since it helps people to concentrate on complex tasks.

2.3 Procedure

The test emphasis both speed and accuracy includes ball speed, ball placement and speed-ball placement. The experimental process includes two target zones with large boxes on them at each side of the table. Participant stands at the middle line of the table to begin. They are to place as many alternate (side-to-side) marks in the boxes as they can in 30 seconds.Count the rally for assessing speed and the number of dots in each box for assessing accuracy. A Bland–Altman plot is a useful display of the relationship between two paired variables using the same scale. It allows you to perceive a phenomenon but does not test it, that is does not give you a probability of error on a decision about the variables as would a test.

3. RESULTS

The statistical analysis the better performance outcome from Pre to Post test was performed by means of ANACOVA. By comparing speed & accuracy both in pre test count the number of dots in 30 seconds with post test count the number of dots in 30 seconds under fatigue and non fatigue state on speed ball.

TABLE 1
ANALYSIS OF COVARIANCE OF SPEED & ACCURACY ON MOTOR IMAGERY OF PROFESSIONAL MALE TABLE TENNIS PLAYERS

Test	Non Fatigue State Speed (Mean)	Fatigue State Accuracy (Mean)	Sum of Squares	df	Mean Square	F-ratio
Pre Test	49.82	50.03	9.62	2	48.11	0.20
Post Test	53.23	52.87	151.36	2	72.54	3.51*

*F ratio at 0.05 level of confidence for 2 (df) =3.1

As shown in table 1 obtained value on the scores of pre test means was 0.20. The analysis of post test means was 3.51 on mental imagery. The obtained F value 3.51 was greater than required value of 3.1 to be significant at 0.05 level. Hence it is accepted that motor imagery positively optimizes high-level performance in fatigue state.

4. DISCUSSION

Table tennis performance itself is influenced by individual differences in growth, maturation, training experiences, competition, participation, and environmental factors. The application of motor imagery by this stage become widespread in psychology scientific literature which show an improved motor performance after training based. Imagined movement duration was significantly longer than that of real movement. Motor imagery technique is often used by elite athletes. They use MI for improving their performance **(Hall et.al 1990, Jones and Stuth, 1997)** who mastered the technical skills of their sport. The findings significantly influence table tennis performance and therefore coaches should take into account both the physical and mental state of table tennis players to optimize high level in fatigue state performance.

5. CONCLUSION

The findings of the study influence of efficacy of motor imagery of table tennis players significantly influenced table tennis performance. Student assessment covered different kinds of evaluations, all of them conducted by the experimenter. The training period on motor imagery technique lasted 8 weeks. Coaches, trainers & physical education experts should take into account both the physical and mental state of table tennis players to optimize high level performance in fatigue state.

REFERENCES

Hall, Craig R., Rodgers, Wendy M. and Kathryn A. (1990), The Use of Imagery by Athletes in Selected Sports The Sport Psychologist, 4 :1-10

Jones, Lesley & Stuth, Gretchen (1997), The uses of mental imagery in athletics: An overview Applied and Preventive Psychology, 6 (2): 101-115

Murphy, S. M. (1994), Imagery interventions in sport, Medicine & Science in Sports & Exercise, 26(4): 486–494.

Zagatto, A.M.; Kondric, M.; Knechtle, B.; Nikolaidis, P.T.; Sperlich, B. (2017), Energetic demand and physical conditioning of table tennis players. A study review. J. Sport Sci., 36 : 724–731.

Faber, I.R.; Oosterveld, F.G.; Nijhius-van der Sanden, M.W. (2014), Does an eye-hand coordination test have added value as part of talent identification in table tennis? A validity and reproducibility study. PLoS ONE, 9.

Zemkova, E.; Hamar, D. (2015), Toward an Understanding of Agility Performance, 2nd ed.; Albert: Bratislava, Slovak Republic.

Ak, E.; Koçak, S. (2010), Coincidence-anticipation timing and reaction time in youth tennis and Ftable tennis players. Percept. Motor. Skill. 110 : 879–887.

Bhabhor, M.K.; Vidja, K.; Bhanderi, P.; Dodhia, S.; Kathrotia, R.; Joshi, V. (2013), A comparative study of visual reaction time in table tennis players and healthy controls. Ind. J. Phys. Pharm. 57: 439–442.

Beata Pluta , Szymon Galas, Magdalena Krzykała and Marcin Andrzejewski (2020), The Motor and Leisure Time Conditioning of Young Table Tennis Players' Physical Fitness Int. J. Environ. Res. Public Health 17: 5733.

Bencke, J.; Damsgaard, R.; Saekmose, A.; Jørgensen, P.; Jørgensen, K.; Klausen, K. (2002), Anaerobic power and muscle strength characteristics of 11 years old elite and non-elite boys and girls from gymnastics, team handball, tennis and swimming. Scan. J. Med. Sci. Sport, 12: 171–178.

Chatterjee, P., Goswami, A. and Bandyopadhyay, A. (2016), Somatotyping and some physical characteristics of trained male and female young table tennis players. Am. J. Sport Sci. 4: 15–21.

Bandi U. (2004). 'The ability to play table tennis, the correlation study between agility and the ability to punch with the ability to play table tennis' Res Rep. Yogyakarta: FIK UNY;