



## Effectiveness of visual imagery training in juggling skills

Dr. Sherin V George

Guest Lecturer, Department of Psychology, Sree Sankaracharya University of Sanskrit, Kalady, Kerala, India

### Abstract

Visual imagery is a widely used sports psychological intervention technique. It is the mental creation or recreation of sensory experiences that appear to the person imagining them to be similar to the actual event. Numerous experiments conducted on the effect of visual imagery training show positive results like performance improvement and concentration. This study examines the effectiveness of visual imagery in juggling training. Juggling is a skill involving throwing objects up to catch and toss up again. This may be one object or many objects, at the same time with one or many hands. This study conducted at a summer camp in Kottayam, Kerala. The subjects were 30 students age ranged between 10- 15. Two groups were selected. First group is given juggling training using standard teaching method and another group received step by step visual imagery training. The time taken for completing the task is recorded. From the data, it is found that visual imagery training is so effective in training of juggling. It opens a new scope for studying the use of this technique in more complex tasks.

**Keywords:** visual imagery, juggling, classical juggling training

### Introduction

Juggling is a skill involving throwing objects for entertainment or sport. The most recognizable form of juggling is toss juggling, in which the juggler throws objects up to catch and toss up again. This may be one object or many objects, at the same time with one or many hands. The most common juggling props are balls or beanbags, rings, clubs, oranges, apples, and special bounce balls. In juggling, a cascade is the simplest pattern achievable with an odd number of props. The simplest cascade is the three-ball cascade. This is therefore the first pattern that most jugglers learn.

For the three-ball cascade the juggler starts with two balls in one hand and the third ball in the other hand. One ball is thrown from the first hand in an arc to the other hand. Before catching this ball the juggler must throw the ball in the receiving hand, in a similar arc, to the first hand. The pattern continues in this manner with each hand in turn throwing one ball and catching another. All balls are caught on the outside of the pattern and thrown from closer to the middle of the pattern. The hand moves toward the middle to throw, and back towards the outside to catch the next object. Because the hands must move up and down when throwing and catching, putting this movement together causes the left hand to move in a counterclockwise motion, and the right hand to move in a clockwise motion.

### Visual imagery

Visual imagery is a widely used sports psychological intervention technique. It has been used in all type of sports and performing activities and has been found consistently to be an effective tool. It is the mental creation or recreation of sensory experiences that appear to the person imagining them to be similar to the actual event. (Suinn, 1993)<sup>[5]</sup> Imagery may seem to refer only to the sense of sight but really it applies to

all of the senses: visual, kinesthetic, auditory, tactile and olfactory.

There are two types of imagery that are internal imagery and external imagery. The external imagery is considered to be outside of you, like watching a movie or a video tape of your performance. Internal imagery is from inside you and considered to be rehearsing what you actually see with your own eyes when you execute your skills.

Numerous experiments conducted on the effect of visual imagery training. Most of the studies show positive results like performance improvement, self discipline, good sleep and concentration.

### Review of Literature

The study of Harris and Robinson (1986)<sup>[1]</sup> shows that imagery is most likely to benefit individuals who believe in it's effectiveness. If used at all, imagery should be approached with the awareness that it is legitimate skill and, like any other skill can be learned over time and with appropriate effect. In their study, Wrisberg and Anshel (1989)<sup>[6]</sup> noted the mental imagery played a substantial role in assisting young boy's free throw performance.

Partington (1990)<sup>[2]</sup> demonstrated that young figure skaters age range between 10 and 14 years could profit from mental imagery training. Predebon and Docker (1992)<sup>[3]</sup> also obtained similar result in a study of 30 male basket ball players in Australia.

A study was done by Suinn (1993)<sup>[5]</sup> that shows the internal perspective results in more favorable images than an external one. These reviews suggest that imagery ability is one of the most critical variables that might influence performance effects, yet it has not received the amount of serious attention from researchers that would be expected.

## Objective of the study

The objective of this study is to find out the effectiveness of visual imagery training in juggling more than classical training.

## Method

### Subjects

The subjects were 60 students from a summer camp in Kottayam district, Kerala age ranged between 10- 15.

### Materials

Balls, stop watch, scoring sheet, and pencil.

### Procedure

The subjects were divided in to two equal groups using random sampling. Each group consists of 30 people. The first group received classical training in juggling for 3 ball cascade. The time taken for completing the task for each subject is measured using a stop watch and recorded in data sheet.

Classical training for 3 ball cascade has 3 steps. In the first step the subject or trainee is instructed to throw a ball from right hand to the left hand as an arc. The throw should be in eye level. In the second step he or she is instructed to hold one ball in each hand and first throw from the right hand and when it comes to the middle of the arc, the left hand ball should throw towards the right. After catching both balls the trainee can go the third step. In this step trainee hold two balls in right hand and one ball in left hand. Throw starts from right hand, when it comes to the middle, throw from the left and when the second ball comes to the middle throw the third ball. After catching these three balls the trainee can repeat these moves without interval and it will make a three ball cascade.

The second group received step by step visual imagery training (internal) for 3 ball cascade. Visual imagery training follows the same steps of classical training with a difference. In visual imagery training, imagination of throwing and catching the balls through the arc is used for learning the task. No balls used in this part. After 5 rounds of just internal visual imagery, the subject tries to do the same with actual ball. Time taken for completing the task is measured and recorded. The scores for the first group and the second group is analyzed using independent sampling t test.

## Result & Discussion

**Table 1**

Groups	Mean	n	Standard deviation
Classical Training	61.4	30	11.05
Visual Imagery Training	38.9	30	8.49

Table 1 shows the mean time taken by each group, number of subjects and standard deviation of each group. From the table we can observe that there is a considerable difference in the mean time taken by each group for completing the task. The mean time taken by first group who received classical training of juggling is 61.4 (one hour and one minute). But the second group who received visual imagery training for the same task completed with less time. They took 38.9 (38 minutes) only. The difference between each group's mean is 22.5 (22

minute). It is a considerable difference. But the sample size was too small to generalize a finding. It is not possible for us to conclude the difference in the score by just observing mean and standard deviation. So I conducted an independent sample t test. The test results are shown below.

**Table 2:** Independent sample t test

t- statistics	6.24
Degrees of freedom	58
Critical value	2.048
Standard error	3.599
95 % confidence interval	13.4, 31.4
P value	0.0001 (two tailed)

The statistical analysis result given in table 2. From table 2 it is clear that the two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant. So Group A (classical training) is significantly different from Group B, (visual imagery)  $t(58) = 6.242, p < .05$ . The mean difference lies between 13.4369 and 31.4965. From these results we can generalize that visual imagery training is so effective than classical training of juggling for basic juggling skills.

### Implications of the Study

This method can be used in different physical training, martial arts, driving, swimming, complex jumping skills like pole vault etc.

This finding is not only useful in Sport psychology, it also can use in rehabilitation process of stroke patients and people have temporary inability to move their body. New researches show the possibility of brain plasticity. If visual imagery training is used with the possibilities of brain plasticity, it will become a new training system and a new hope for the patients to overcome their paralysis.

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