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Imagery: It's effects and benefits on sports performance and psychological variables: A review study

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Abstract

Background: A large body of research indicates that visual cues help to better regain and remember information. Imagery is a sensory experience that occurs in the absence of usual external stimuli. In using imagery, athletes create or recreate an experience in their mind that seems real-life like. Currently, most elite athletes use imagery and an increasing number of recreational athletes are beginning to use imagery as well. Here the researcher makes an attempt to summarize the research studies related to imagery intervention and its effect on sports performance.

Method: The studies were searched through online websites like google scholar, pubmed, shodhganga, etc. The studies were selected for the purpose, was again scrutinized by exclusion and inclusion criteria. This review was based on a systematic literature search, done during the period 2000 to 2017. Only documents in English language were taken into consideration.

Sources: Google Scholar, Pubmed, Shodhganga, Google

Summary measure: Effect of imagery intervention on psychological variables and sports performance.

Results: Total 73 studies were reviewed and out of 73, 19 studies met the inclusion criteria. By scrutinizing the selected studies revealed that imagery intervention can improve the sports performance in various sports. The studies done on volleyball, archery, basketball, golf, badminton, rugby, high jump, football and long distance runners, etc. 11 studies shows that the researchers chosen minimum period of training was 6 weeks and more. While summarizing the effect on psychological variables, most of the researchers selected anxiety, self confidence, imagery ability, self efficacy and attention. They given the imagery training by using scripts and audio video recording techniques.

Conclusion: By analyzing the review studies, it is evident that imagery intervention is beneficial for both psychological and performance of the athletes.

Keywords: Imagery, Guided imagery, event rehearsal imagery, cognitive anxiety, somatic anxiety

Introduction

A large body of research indicates that visual cues help to better regain and remember information. Imagery is a sensory experience that occurs in the absence of usual external stimuli. In using imagery, athletes create or recreate an experience in their mind that seems real-life like. Imaging a sport skill is similar to actually performing the skill, except that instead of actually physically performing the skill, only experience the skill in our mind. Characteristic of imagery is that it is poly sensory—it involves all of the senses. Although many coaches and athletes use the term's imagery and visualization simultaneously, imagery is more than just visualization. Imagery can involve all of the senses and not just the visual sense.

In fact, one key to creating a clear, real-life like image is to involve all of the senses including visual (sight), kinesthetic (how the muscle feels as it moves), tactile (touch) auditory (sound), olfactory (smell), and gustatory (taste).

In addition to the primary senses, athletes can also experience the emotions associated with sport participation. For example, athletes can feel the nervousness and excitement build as they prepare for a competition in their mind. They can also experience the satisfaction, joy, and pride associated with performing well in their mind's eye. Whether you imagine yourself becoming angry as you argue with the umpire, feeling anxiety as you prepare to perform, or enjoy the excitement you feel when you are playing well and with confidence,

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the effect on the nervous system may be almost identical to the actual experience.

Currently, most elite athletes use imagery and an increasing number of recreational athletes are beginning to use imagery as well. Here the researcher makes an attempt to summarize the research studies related to imagery intervention and its effect on sports performance.

Materials & methods

The studies were searched through online websites like google scholar, pubmed, shodhganga, etc. the studies were selected for the purpose was again scrutinized by exclusion and inclusion criteria. This review was based on a systematic literature search, done during the period 2000 to 2017. Only documents in English language were taken into consideration.

Inclusion criteria: for selecting the appropriate reviews

1. Only experimental studies were considered.
2. Studies from 2000 to 2017 were included.
3. Only imagery interventions were considered.

Exclusion criteria

1. Studies without relevant informations.
2. Combined studies includes other psychological intervention was excluded.
3. Studies done before 2000 were not considered.

Table 1: Complete information regarding the reviewed studies.

Type of study	Number
Total studies reviewed	73
Studies other than experimental	22
Studies done on patients	6
Studies before 2000	4
Studies without relevant information	14
Combined studies	8
Selected studies for the purpose	19

Results & discussion

This review was based on a systematic literature search, done during the period 2000 to 2017. Table 2 shows the studies which examined the effect of imagery intervention on sports performance.

Table 2: Review studies examined the effect of imagery intervention on sports performance

Author	Year	Subjects	Duration	Method	Dependent variable	Results	Title
Spino MP & Straub W F	2014	74	8 weeks	Event rehearsal imagery Internal guided imagery	Running performance	Improved, time reduced	Effect of mental training on the performance of college age distance runners
Seif B T, Kordi R, Memeri A	2013 [7]	N=44 Youth= 22 Adult = 22	12 weeks	Cognitive imagery	Successful passing in football	Youth improved Adults have no change	Effect of mental imagery on performance elite athletes in youth and adult age group; a randomized study
Philip P, Munies S & Simpson D	2012 [4]	4	15 week	Imagery training through scripts	Thousand yard swimming performance	Improved performance	Effect of imagery training on swimming performance: an applied investigation
Olsson C, Jonsson B & Nyberg L	2008		6 week	Internal imagery programme	Failed attempts Take off angle Jumping height Bar clearance	No change No change No change Improved	Internal imagery training in active high jumpers
Ekeocha T C & B S	2015 [15]	N= 67	5 Consecutive days	Guided imagery	25 free throws	n = 34 improved n = 26 decreased n =9 no change	Effects of visualization & guided imagery in sports performance
Nicholls A R, Remco C J & Nicholas L H		4	12 Weeks	Individualized imagery	Golf performance Flow state	Improved Improved	The effects of individualized imagery interventions on golf performance and flow states
Gaggioli A	2013 [19]	60	4 Weeks	Mental imagery	Coordination Movement accuracy	Improved Improved	Benefits of combined mental and physical training in learning a complex motor skill in basketball
Bargi T S <i>et al</i>	2012	69	8 weeks	Video aided cognitive imagery	Perfect soccer pass	Pass rate increased	The effect of an ecological imagery program on soccer performance of elite players
Balamurugan R, Rajeswaran & Suresh Kaliraj	2016 [14]	30	6 week	Auditory tape and visual aided imagery	Serving ability Passing ability	Improved Improved	Effect of imagery training on selected skill performance variables of male volleyball players

By using the selection criteria 9 studies are summarized here. The above studies examine the effect of imagery intervention on sports performance. It is evident that most of the studies are agreeable with the fact imagery intervention can enhance the performance in sports (Philip P, Muncies & Simpson, 2012; Nicholls AR, Remco C J & Nicholls L; Gaggioli A, 2013; Balamurugan R, Rajeswaran & Suresh Kaliraj, 2016)^[4, 19, 14]. The study done by Seif BT, Kordi R & Memari A revealed that 12 weeks of cognitive imagery improves the successful passing in football on youth players but the training programme couldn't enhance the passing ability of

the adults. Olsson C, *et al* examined the effect of internal imagery training in active high jumpers. They chosen failed attempts, take off angle, jumping height and bar clearance as dependant variable. The results of the study shows that 6 weeks of internal imagery program couldn't alter the variables except the bar clearance. Ekeocha T C & B S conducted a study on effect of visualization and imagery ability on basketball players' free throw ability. The study reveals that 5 days of guided imagery programme enhance 34 players free throw score, same time decreases 26 players performance and 9 players shows no change in their free throw shooting.

Table 3: Studies on Effect of imagery intervention on psychological variables and sports performance

Author	Year	subjects	Duration	Method	Dependent variable	Results	Title
Jaafa & kassim	2016 ^[13]	60	6 weeks 3 sessions/week	Imagery training through audio	Cognitive anxiety Somatic anxiety Self confidence performance	Decreased Decreased Improved Improved	The effectiveness of imagery training on anxiety levels and performance amongst athletes in archery
Ramachandran A	2005 ^[1]	24	6 Weeks 3 sessions/week	Various imagery modalities (audio, script, video)	Pre competition anxiety Self confidence performance	Increased Improved Improved	The effect of various imagery modalities on pre competition anxiety, self confidence and archery performance
Radhakrishnan K	2008 ^[2]		12 Weeks	Mental imagery	Somatic anxiety Cognitive anxiety Self confidence Attention Serve Pass Attack Block	Reduced Reduced Increased Increased Improved Improved Improved Improved	Effect of mental imagery training programme on selected psychological variables and skill performance of volleyball players
Hammond T.G.	2010 ^[17]	4	3 Weeks	Motivational general mastery imager	Sports confidence Golf self efficacy Golf performance	Increased Increased Improved	The effects of a motivational general mastery imagery intervention on the imagery ability and self efficacy of inter collegiate golfers
Baughman L	2017 ^[16]	5	5 week	Pettlep imagery intervention	30 yard shot Imagery ability	Accuracy decreased Increased	The effect of a PETTLEP imagery intervention based pre performance routine on golfers short game performance
Buck J M	2016 ^[6]	20	3 Day	Structured imagery protocol, video recording	Self efficacy Front squat performance	Increased Improved	The effects of mental imagery with video modeling on self efficacy and maximum front squat ability
Yahya M F, Ismail M, Amer A	2016 ^[12]	48	3 Weeks	Practice in mind training (imagery)	Self confidence Anxiety level tolerance Kicking performance	Increased Improved Improved	The idea of using practice in mind training program for rugby players to improve anxiety & kicking performance
Mousavi S H & Meshkini A	2011 ^[9]	50		Mental imagery	Anxiety Performance	Reduced Increased	Effect of mental imagery upon the reduction of athletes anxiety during sport performance
Rattanakoses R <i>et al</i>	2012 ^[11]	66	10 weeks	Imagery practice program	Imagery ability	Improved	Effect of imagery practice program on imagery ability in Thailand
Besiktas M Y & Bicer T	2013 ^[18]	120	1 Week	Mental imagery exercise training programme	Mental imagery skills	Improved	Mental imagery training programme implementation and measurement for elite athletes

The above table summarizes 10 studies which examine the effect of imagery training on both psychological variables and sport performance. Most of the studies reveals that imagery interventions can alter the psychological variables with

improvement in sports performance (jaafa & kassim, 2016; ramachandran A, 2005; Radhakrishnan K, 2008; Hammond TG, 2010; Baughman L, 2017; Buck J M, 2016; Yahya MF, ismail M & Amer A, 2016; Mousavi S H & Meshkini A,

2011) [13, 1, 2, 17, 16, 6, 12, 9]. Besiktas M Y & Bicer T, 2016 [18] and Rattanakoses R *et al*, 2012 [11] determined the effect on psychological variables. The results of their studies show that the mental imagery can improve the imagery ability and mental imagery skills.

Discussions of the review studies

For the purpose of the study total 73 research studies were short listed. Then the researcher expelled the studies which should not meet the inclusion criteria. From the total studies 22 studies were rejected because the methods of studies were survey, assessment, correlation and observation studies. 6 studies were done on the patients for rehabilitation. 14 studies also didn't considered for the purpose because the absence of relevant information in the study. After scrutinizing of total studies, 19 studies were selected for the analyses.

From the 19 studies it is revealed that imagery intervention can improve the sports performance in various sports. The studies done on volleyball, archery, basketball, golf, badminton, rugby, high jump, football and long distance runners, etc. 11 studies shows that the researchers chosen minimum period of training was 6 weeks and more. Training period less than 1 week doesn't shows much improvement in the sports performance but in the aspect of psychological variables 3 days of training is enough to make alterations in those variables. While summarizing the effect on psychological variables, most of the researchers selected anxiety, self confidence, imagery ability, self efficacy and attention. They given the imagery training by using scripts and audio video recording techniques.

Conclusion

Imagery is a supplement to physical practice. However, imagery can be used as a substitute for physical practice when athletes are not able to effectively practice physical skills such as when fatigued, over trained, injured or when environmental conditions (e.g., poor weather) prevent physical practice. By analyzing the above mentioned studies, it is evident that imagery intervention is beneficial for both psychological and performance of the athletes.

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