

The Impact of Mental Training Program to Advance Shooting Performance Level of Basketball Juniors

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Abstract: The aim of this study was to identify the effectiveness of a mental training program on improving the shooting level of basketball beginners. A sample of 30 players of age under 16 years old of Young Muslims Club in Port Said has been selected (15.404 ± 0.794 years and 4.313 ± 0.769 years). They have been divided into two groups (experimental and control). The experimental group was subjected to a mental training program of eight weeks at five units of training each week at a rate of 15 to 30 minutes. The most important results have indicated to remarkable progress in the various research variables: the perception of time and distance, the ability to relax, performance level, visual spatial perception and the percentage of shooting while there was no significant progress compared to what is achieved when the mental training program preceded the implementation of the sports training program.

Key words: Mental training % Basketball % Shooting

INTRODUCTION

Because motor skills in basketball are varied, they require different levels of mental work. Mental training represents one of the essential movements in the preparation for discussion, as sports achievements require great amount of mental uses and taking actions [1, 2]. Mental training is not only one of sports training fields, but it is also an important and complementary part of motor training. It represents the basic part of player preparation to get involved in competitions as it includes conception of the movement and sequence of skills and situations [3].

Mental training is defined as a repetition or an imaginative mental retrieval to the content or the content of skill without scenes. Also, it is defined as the programming of accomplishment apparatus in the brain and nervous system for ways of imagination through mental impressions and when training (i.e. repetition) on this program occurs, it becomes a custom. In addition, mental training is defined as a repetition of motor skill perception that has already been learned to upgrade this skill. Mental training is classified among training methods used in improving performance because it is a complementary coaching mission and not a substitute of physical training [4-6].

Musa [7] has conducted a study aiming at finding out an overlapped relation between attention degrees and levels of skilled and tactical performance of basketball players. Descriptive method has been used on a sample of 48 male and female athletes in basketball. The researcher used the test of attention in basketball; the most important results were the existence of statistical significant relationship between the level of skill and tactical performance and the characteristics of attention.

Savoy [8] has conducted a study aiming to design a program of mental training level and be familiar with its impact on the level of performance in basketball during a sports season. The researcher has applied the experimental method on only one player through the assessment of the performance of the female player from the beginning of the season to the end; the duration of schedule is a full sports season. The most important results indicated declining anxiety level before the game upon the player and the improvement of performance during the match, which indicates the effectiveness of mental training to reduce stress and anxiety and to increase the ability of attention concentration which in turn affects improving the level of player's skill performance.

Vernacchia and Cooke [9] have conducted a study to determine the impact of mental training method on the performance of basketball players and to be familiar with the program's impact on improving the level of concentration during the games. The researchers have used the experimental method on a sample of basketball university players and specialized in shooting and scoring. The most important results have indicated that mental training method is effective and useful according to the performance statistics of matches and self-report for each.

Poczwardowski and Fisher [10] have conducted a study to determine the impact of mental preparation on shooting of free throw and self-efficiency of academic players. Researchers have used the experimental method on a sample of 43 student basketball players who were intentionally selected. Training program of psychological skills was used; the measure of the ability to relax and the measure of mental imagery and the measure of self-efficiency have been applied. The most important results were that there are statistical significant differences for the two experimental and control groups in the level of the free throw shooting and the self-efficiency for the experimental group.

Morris and Watt [11] have conducted a study to find out the impact of the mental imagery on shooting in basketball and anxiety as a feature and status. The experimental method has been applied on a sample of 18 intentionally selected basketball players. The measurements used were: anxiety as a feature and status, self-relaxation, the ability to perception and the ability to relax and the rate of heart pulses. A device for measuring pulse rate was used and a skill test was performed to measure free throws with a high level. Results of the experimental group were better than the control group that did not use the mental imagery.

The aim of the present study is to design a mental training program for basketball players and specify the effectiveness of the proposed program on shooting in basketball.

MATERIALS AND METHODS

Method Design: The author used the experimental approach. Mental training mainly depends on the concentration of technical components for skills in accordance with their sequence based on scientific literature [3, 12-14]. They indicated that mental training contributes to enhancement of the motor performance of skill. Also, they explained that there is a certain phase must be reached by the player before starting the actual training directly to a phase of relaxation for each of physical, mental, neurological aspects. To get to the relaxation phase, the player follows a number of steps to directly start mental training. Because this type of training requires the player to have a high degree of concentration and imagination and summon mental images, through the specific dimensions of mental training. Training took eight 8 weeks of five weekly training units with rate of 15 to 30 minutes for each training unit [13, 14].

Participants: The sample has been intentionally selected from basketball players of Muslims Youth Club in Port Said, under 16 years old, including 30 players divided into two equal groups, one of them is an experimental and the other is a control group; each is of 15 players. Training age of the player is not less than 3 years and the range of player's participation in basketball for the age group is considered (Table 1).

Measures: Test of the time awareness, test of distance awareness, the measurement of ability to relax, test of the ability to an optical spatial perception tests of shooting in basketball, the actual training program (proposed) are used as measures in the present study. Basketball players have been selected for the mental training program by the repetition of a retrieval method of shooting performance and mental imaginative and concentrating on the identical performance of shooting (the free throw –layup shot).

Table 1: Arithmetic mean and standard deviation upon the two experimental and control groups and gathered group for some of the research variables

Variables	Measurement Unit	Experimental Group		Control Group		Combined sample	
		S	P	S	P	S	p
Chronological Age	Year	15.44	0.760	15.370	0.85	15.404	0.794
Training Experience	Year	4.22	0.756	4.406	0.84	4.313	0.769
Perception of time	second	4.212	0.796	4.198	0.884	4.205	0.821
Perception of distance	inch	25.314	0.765	25.406	0.777	25.459	0.758

Procedures: A program of mental training has been applied of five training units every week for eight weeks in the training period applicable to the two groups (experimental, control). Mental training program consisted of three dimensions:

- C This dimension, which takes two weeks, included the player to be aware of the importance of relaxation and to be taught how to do muscle contraction and diastole and training of mental, muscular and willful relaxation, accompanied by measurement of the pulse before and after the relaxation to get to know the effectiveness of this method to control the intensity of stimulation or anxiety [15].
- C This dimension lasted for four weeks and included motor skill to let the player be aware of the role of mental training and its importance on the control of breathing associated with the performance of skill in identical shape as well as concentrating on the muscles which entrusted to work and carry out the skill.
- C Containing two weeks, this dimension included the retrieval of mental concentrating skill on the muscle contractions that must take place during the actual performance of the skilled shooting.

RESULTS AND DISCUSSION

There are no statistical significant differences between the results of the two pre and post-measurements of control group for all research variables. The value of computed (T) is less than the value of tabular (T) at the level of 0.05. The researcher thinks that training programs for sports basketball teams, which are carried out in various sports clubs, basically focus on developing the physical and skilled aspect and disregard of interesting in the psychological aspect.

Although the experts of sports training assure that the excessive motor performance is a direct result of full cooperation between the knowledgeable aspects associated with the same motor performance [4], Table 4.

Table (3) shows that twisting coefficients for variables range between (0.229, 2.401) of Experimental Group and range between (0.608, 2.386) of Control Group. They are values ranging between (3±) which indicate to homogeneity among the members of each group of the two groups of variables (under discussion).

There are statistical significant differences between the two pre and post-measurements of the experimental group for majority of research variables (The ability to relax, dimensional spatial imagination, shooting from free throw, layup shot) where the computed value of (T) is more than the value of tabular (V) at the level of 0.05. Table 5 also shows that there is a difference between the two means of pre and post-measurement (time perception, perception of distance), but it did not reach the point of statistical significance.

There are statistical significant differences among the results of two post-measurements for the two experimental and control groups for the ability variables of relax, optical and spatial imagination, shooting from the free throw and layup shot. The values of computed (T) have reached more than the value of tabular (T) at the level of 0.05. Table 6 also shows that there is a difference between the two means of the dimensions of the experimental and control groups in the level of the perception of time and the perception of distance did not reach the point of statistical significance (Table 6)

The first hypothesis was that there would be no statistical significant differences for the research variables (perception of time and distance, ability of relaxation, optical spatial perception, free throw shot, layup shot) between the both pre and post-measures of the control group.

Table 2: Arithmetic mean, standard deviation, the difference between the two means and the value of (T) computed for both experimental and control groups of variables under discussion, N = 15

Variables	Measurement Unit	Experimental Group		Control Group		Difference of both means	The value of computed (T)	
		S	P	S	P		S	P
Chronological Age	Year	15.44	0.760	15.370	0.85	0.07		0.238
Training Experience	Year	4.22	0.756	4.406	0.84	-0.186		-0.607
Perception of time	Second	4.212	0.796	4.198	0.884	0.014		0.45
Perception of distance	Day	25.314	0.765	25.604	0.777	-0.290		-2.025
Ability of relaxation	Degree	37.322	4.201	37.126	4.137	0.196		0.124
optical spatial perception	Degree	37.707	3.306	36.243	3.733	1.464		1.098
free throw shot	Number	6.500	1.212	6.400	1.205	0.100		2.874
Layup shot	second	3.350	0.812	3.200	0.696	0.150		0.627

The value of tabular (T) at the level of 0.05 equal 2.045

Table 3: Arithmetic mean, standard deviation, median and twisting coefficient for both experimental and control groups of variables under discussion, N = 15

Variables	Measurement Unit	Experimental Group				Control Group			
		s	p±	M	Skew	S	p±	M	Skew
Chronological Age	Year	15.44	0.760	15.0	1.743	15.370	0.85	15.0	1.303
Training Experience	Year	4.22	0.756	4.0	0.881	4.406	0.84	4.0	1.441
Perception of time	Second	4.212	0.796	3.641	2.152	4.198	0.844	3.671	0.837
Perception of distance	Day	25.314	0.765	24.814	1.961	25.604	0.777	24.986	2.386
Ability of relaxation	Degree	37.322	4.201	37.00	0.229	37.126	4.137	36.00	0.817
optical spatial perception	Degree	37.707	3.306	37.00	0.642	36.243	3.733	37.00	0.608
free throw shot	Number	6.500	1.212	6.00	1.238	6.400	1.205	7.00	1.494
Layup shot	second	3.35	0.812	4.00	2.401	3.200	0.696	3.00	0.862

Table 4: Arithmetic mean, standard deviation, the difference between them and the value of computed (T) for the two pre and post-measurements of control group of variables under discussion , N = 15

Variables	Measurement Unit	Post-measurement		Pre-measurement		Difference between both means	The value of computed (T)
		s	p	s	p		
Perception of time	Second	3.991	0.766	4.198	0.844	-0.207	-0.4796
Perception of distance	Inch	25.207	0.816	25.406	0.777	-0.397	-1.3183
Ability of relaxation	Degree	37.514	3.868	37.126	4.137	0.415	0.168
optical spatial perception	Degree	38.127	3.419	36.243	3.733	1.884	1.393
free throw shot	No.	7.100	1.225	6.400	1.205	0.700	1.525
Layup shot	second	3.350	0.587	3.200	0.696	0.150	0.767

The value of tabular (T) at the level of 0.05 equal 2.045

Table 5: Arithmetic mean, standard deviation, the difference between them and the value of computed (T) for the two pre and post-measurements of experimental group of variables under discussion, N = 15

Variables	Measurement Unit	Post-measurement		Pre-measurement		Difference between both means	The value of computed (T)
		s	p	s	p		
Perception of time	Second	3.875	0.756	4.212	0.796	-0.337	-1.1486
Perception of distance	Inch	24.974	0.873	25.314	0.765	-0.340	-1.09596
Ability of relaxation	Degree	41.212	3.116	37.322	4.201	3.990	*2.855
optical spatial perception	Degree	41.664	2.857	37.707	3.306	3.957	*3.527
Shooting from free throw	No.	9.900	2.613	6.500	1.212	3.400	*4.417
Layup shot	second	4.500	0.688	3.35	0.812	1.150	-8.761

The value of tabular (T) at the level of 0.05 equal 2.045

Table 6: Arithmetic mean, standard deviation, the difference between the two means and the value of computed (T) for the two pre and post-measurements of experimental and control group

Variables	Measurement Unit	Experimental Group		Control Group		Difference between both means	The value of computed (T)
		s	p	s	p		
Perception of time	Second	3.875	0.756	3.991	0.766	-0.116	-0.4033
Perception of distance	Inch	24.974	0.873	25.207	0.816	-0.233	-0.7295
Ability of relaxation	Degree	41.212	3.116	37.514	3.868	3.671	*2.765
optical spatial perception	Degree	41.664	2.857	38.127	3.419	3.537	*3.0867
Shooting from free throw	No.	9.900	2.613	7.100	1.225	2.800	*3.630
Layup shot	second	4.500	0.688	3.350	0.587	1.150	*5.685

The value of tabular (T) at the level of 0.05 equals 2.045

The retrieval of information and experiences enable to achieve more specific understanding of the movement and the sequence continuation and knowledge of the components of movements and their requirements. It also allows the athlete to draw integrated model of the movement for him [4]. It was also recognized the necessity of providing special requirements for access to the highest sports levels from which are personal characteristics and motor skills [5]. Although the time period of the experiment, which takes up to eight weeks, there has been no fundamental change in the variables of research and this is a proof that the programs used by sports basketball teams are currently lacking of concerning about psychological and mental aspect. Therefore, they must be developed and modernized by the introducing the psychological and mental training programs in order to achieve distinct skilled performance by involving the mental programs, internal and external imaginary training and the training of optical motor behavior [3,12-14,16]. Therefore, the first hypothesis was supported.

The second hypothesis was that there would be statistical significant differences of the said research variables between both pre and post measures of the experimental group in favor of the post-measures.

Researcher explains the acquired progress of the research variables to the effectiveness of the proposed mental training program. Despite the lack of statistical significance in the variables of the perception of time and the perception of distance, progress has been made in view of the differences among the means for each measurement between pre and post-means. This is an achievement in itself, the short duration of the program may be because the progress accomplished in the time and distance needs longer period exceed that time through which the proposed program has been carried out [8-10, 17, 18]. Thus, the second hypothesis was supported.

The third hypothesis was that there would be statistical significant differences of the said research variables between both post-measures for the two research groups in favor of the experimental group.

Researcher explains the acquired progress of the research variables to the direct influence by the content of the proposed mental training program and its synonym to reduce tension and anxiety that accompanies an athletic competition. Therefore, it was found out that the proposed program has supported the ability of the player to relax so that he is ready to face the pressures and can mobilize his energies [15] and improve the performance of

the shooting. At the same time, the researcher interprets the lack of the significance of the perception of time and the perception of distance that the players get used to shot on the basket during training and competition and his recognition of some circumstances that occur during it, which in turn helps him to recognize the time and distance more specifically.

Although the value of computed (T) does not reach the variables of the perception of time and perception of distance to the extent of the statistical significance with the application of the proposed program for eight weeks by 40 training units with rate of 5 units per week. Even though the difference between the two means of post-measurements, which amounted to 0.116 for the time and 0.33 for the distance, it is a real accomplishment exceeding what had been achieved by the control group members. This is what Allawi [1,2] has confirmed when he suggested that the convergence of talented athletes in the level of physical and skill and tactical performance, winning is achieved where the psychological factor represents a significant factor which plays a major role in achieving the outcome as a consequence of their struggle at the beginning of sports competitions, so they can win. This is what the training process aims at. The proposed program of mental training embodies that and confirmed by Helmy [5] that the purpose of training is to acquire progress and to break the stagnancy. Therefore, using mental training is a complement training act and not a substitute for the physical training. This result is consistent with the foregoing; the hypothesis has been partial achieved.

CONCLUSION

Implementation of the proposed mental training program has shown significant progress in perception of the basketball player to the time and the distance between the scoring basket as well as its ability to relax, thus improving the performance style form of the player and improving the visual perception, which in turn has contributed to make progress in the rate of scoring. When the sports training of the basketball player contains mental training for the skill, it can produce better results.

Recommendation: The proposed mental program can be applied within athletic training programs for the basketball player at various levels in sports clubs and national teams, where the results bring out the high rate of scoring of the group, which had practiced mental training along with sports training. Therefore, Researchers should be

urged to design training programs for various gathered teams and individual games at all levels to advance the level of performance and achieve better results. Finally, a psychologist should be available with sports teams, entrust him to prepare the players psychologically in various stages of preparation. His mission is to reduce tension and nervous tension and anxiety, which the player is exposed to during training and competition to achieve more advanced and superior results.

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