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An Educational Program Using Mental Training and its Effects Through Motor Learning Phases on the Slow Backward Dive with One Leg after Another

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Abstract: The current research aims at designing a mental training program through motor learning phases and identifying its effects on the performance level of slow backward dive with one leg after another. The researcher used the quasi-experimental approach (one-group design) with pre, intermediate and post-measurements. Research community was purposefully identified as the students of the third grade, Methodology and Curricula Department, Faculty of Physical Education, Tanta University, Egypt (n=100) during the academic year 2009 - 2010. Sample (n=20) was randomly chosen from the research community. The researcher concluded that the recommended educational program with mental training had a positive effect on the motor learning phases of the slow backward dive with one leg after another among the three measurements in favor of the post-measurement and that mental training had a positive effect on the motor learning phases of the slow backward dive with one leg after another among the three measurements in favor of the post- measurement.

Key words: Motor Learning Phases % Mental Training % Slow Backward Dive

INTRODUCTION

Learning with modern methods is related to experience and practice, not just listening. Experience, either mental or material, will never be fruitful unless it is gained by hard work and personal effort. Using modern methods in learning sports activities provides the learner with great learning opportunities through using all body senses in receiving knowledge and increasing the effectiveness of learning through making it livelier and stronger. This increases the learner acquisition of sequential phases of different skills. Each sports activity has its own mental needs that vary from one activity to another. In addition, each skill inside the same activity has its own mental needs. Mental training is a teaching technology strategy that gained the interest of experts as it has an effective role in improving the performance level. It is not limited to competitions as it can be used effectively in learning motor skills [1].

Some researchers divided the preparation phase into three sub-phases: preliminary acquisition-good acquisition - mastery and maintenance. Each sub-phase has its mental needs as these sub-phases vary in needs from one to the other [2]. Several studies agreed that mental training is effective in improving performance level [3-7]. Several studies indicated the importance of metal training in understanding, identifying, developing and improving skills. It helps the learner to concentrate on the general framework of the skill rather than its specific details [4, 8, 9].

Slow backward dive with one leg after another is a set of movements in gymnastics that needs a high degree of back bone flexibility as it is normally performed slowly with leg moves. Gymnastics skills in general and especially slow backward dive, need quick thinking and good identification. It is considered very difficult as it is performed against the normal motor path and, therefore, needs great effort during learning as it is a complex skill that needs good timing and mastery over all parts of the body. It is different from one performer to another as each performer has his/her own mental needs. Therefore, division of learning phases should be followed according to mental abilities and skill [10].Mastering this skill needs numerous performances to strengthen neurological paths controlling and directing muscles responsible for performing this skill. Mental imagery is one of these methods. When the performer generates a mental image of the skill regularly, this leads body muscle to really involve in performing the skill [11].

The researcher noticed the weakness of performance level of the slow backward dive. This is evident through marks of practice tests of gymnastics and the

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Table 1: Sample Characteristics (n=20)

Variable		Measure	Mean	Median	SD	Inflation	Squewness
			Growth Factors				
1-	Age	Year	19.44	19.50	0.52	-0.96	-0.10
2-	Height	Cm	163.14	163.50	2.58	-0.30	-0.12
3-	Weight	Kg	63.57	63.10	3.65	-1.18	0.18
4-	IQ	Mark	21.84	21.66	1.19	-0.85	0.05
			Mental Abilities				
1-	Muscle tension (trunk - face - legs) relaxation ability	Mark	63.96	64.30	2.19	-0.50	-0.38
2-	Mental imagery (visual)	Mark	11.38	11.30	0.43	-0.77	0.26
3-	Mental imagery (audio)	Mark	10.86	10.90	0.85	-1.36	-0.06
4-	Mental imagery (motor)	Mark	10.66	10.67	0.52	-1.23	-0.10
5-	Mental imagery (emotional)	Mark	11.29	11.09	1.013	-0.21	0.11
6-	Mental imagery and imagination ability	Mark	11.44	11.23	0.88	-0.81	0.51
7-	Attention	Mark	6.58	6.59	0.50	-0.68	-0.44
			Technical Level				
1-	Slow backward dive (preliminary coordination)	Mark	6.72	0.88	0.88	-0.08	0.93
2-	Slow backward dive (good coordination	Mark	7.59	0.70	0.70	-0.50	0.61
3-	Slow backward dive (auto coordination	Mark	8.61	8.70	1.30	-0.86	-0.24
Total			22.93	23.13	1.76	-1.11	-0.03

Table 1 indicates that sample is free of any radical distributions.

identification of mental requirements of each learning phase. This leads to variations in performance level through out motor learning phases. This led the researcher to perform the current research. The current research aims at designing a mental training program through motor learning phases and identifying its effects on the performance level of slow backward dive with one leg after another.

Hypotheses:

- There are statistical significant differences among the means of the three measurements (pre / intermediate / post) for the mental training program through motor learning phases.
- There are statistically significant differences among the means of the three measurements (pre / intermediate / post) for the performance level of slow backward dive with one leg after another through motor learning phases.

MATERIALS AND METHODS

The researcher used the quasi-experimental approach (one-group design) with pre-, intermediate and post-measurements. Research community was purposefully identified as the students of the third grade, Methodology and Curricula Department, Faculty of Physical Education, Tanta University, Egypt (n=100) during the academic year 2009 - 2010. Sample (n=20) was randomly chosen from the research community. Table 1 shows scientific coefficients of the sample members.

Preparation of Experimental Materials: The current research studies the effects of a mental training program through motor learning phases on the performance level of slow backward dive with one leg after another. The researcher depended on three major sources (document analysis - tools and equipments - tests).

Documents Analysis: The researcher verified the age of sample members through faculty registry and recorded their personal data in the specified form.

Equipments: A gymnasium - a restameter for heights - a medical balance for weights - measuring age

Pictured Intelligence Test: A non-verbal intelligence test prepared by Saleh [12]. It can be applied to a great number of learners at the same time. It is a number of pictures grouped in 5-picture-sets consistent in one shape and different in all other aspects. It is necessary to have the

ability to identify differences and similarities among pictures. It consists of 60 questions that should be answered in 1 minute. It is highly valid and reliable as it was applied in various studies [3, 4, 7].

Technical Tests: The researcher applied technical tests used in previous studies [7, 13] measuring the performance level of slow backward dive (preliminary coordination), slow backward dive (good coordination) and slow backward dive (auto coordination) in addition to total performance level.

The Recommended Mental Training Program: This program aims at improving mental skills (relaxation - mental imagery - attention). In addition, it aims at improving the skill under investigation all along the three learning phases (preliminary coordination, good coordination and auto coordination or mastery). Each phase has its mental requirements so that progress from one phase to another depends on progress in mental skills, leading to further progress in improving performance. Mental training is a teaching technology strategy that gained the interest of experts as it has an effective role in improving the performance level.

Program Evaluation

The Researcher Followed the Following Techniques in Evaluating the Program:

Preliminary Evaluation: This type of evaluation is used before application through pre-measurement (from 1/10/2010).

Phase Evaluation: This type of evaluation is used during application through intermediate measurement (from 1/11/2010).

Final Evaluation: This type of evaluation is used after application through post-measurement (from 1/12/2010).

Statistical Treatment: The researcher used SPSS software to generate the following statistical treatments: mean - median - standard deviation - inflation - squewness - variance analysis (F) - L.S.D - improvement percentage.

RESULTS AND DISCUSSION

Table 2 showed the difference significance among the three measurements (pre/intermediate/post) for the mental ability variable on p#0.05. It indicated statistically significant differences and this led the researcher to perform L.S.D test for the least variance significance among measurements.

Table 4 showed indicated improvement percentages among the three measurements (pre/intermediate/post) for the mental ability variable. It indicated differences in the percentage of variance among some measurements.

Table 5 showed the difference significance among the three measurements (pre/intermediate/post) for the technical performance variable on p#0.05. It indicated statistically significant differences and this led the researcher to perform L.S.D test for the least variance significance among measurements.

Table 7 showed indicated improvement percentages among the three measurements (pre/intermediate/post) for the technical performance variable.

Tables 2-4 presented results of mental variables affecting the skill under investigation as a result of mental training during the motor learning phases of the low backward dive with one leg after another. Table 2 indicated statistically significant differences among mean measurements on p#0.05 as F tabulated value were 3.17. This was under the calculated values ranging from 433.536 for mental imagery (audio) and o 836.069 for motor imagery (motor) and this led the researcher to perform L.S.D test for the least variance significance among measurements. Table 3 indicated statistically significant differences among the three measurements (pre/intermediate/post) for the mental ability variable on L.S.D test as the minimal value was 0.26 for mental imagery (visual) and the maximum value was 1.35 for Muscle tension (trunk - face - legs) relaxation ability. This indicates statistically significant difference among the three measurements in favor of the post-measurement. Table 4 indicated improvement percentages among the three measurements (pre/intermediate/post-) for the mental ability variable. It indicated that variance percentage on all physical variables ranged between 15.150% as a minimal value for mental imagery (visual) and 94.93% as a maximum value for mental imagery (motor). This indicated that significant differences are in favor of the post-measurement.

The researcher thinks tat this improvement is due to the recommended program. This is consistent with several studies indicating mental training is very important in the sports field as it affects the performance level positively and helps coaches and athletes in learning and mastering the needed skills while saving time and effort [5, 6, 14, 15].

Table 2: Variance significance among the three measurements (pre /intermediate/post) for the mental ability variable under investigation

Variable		Source of variance	DF	Sum of Squares	Mean Squares	F
1-	Muscle tension (trunk-face-legs)					
	relaxation ability	Intra-measurements	2	6336.054	3168.027	660.289*
		Inter-measurements	57	273.483	4.798	
		Total	59	6609.537		
2-	Mental imagery (visual)	Intra-measurements	2	356.436	178.218	928.218*
		Inter-measurements	57	10.918	0.192	
		Total	59	367.354		
3-	Mental imagery (audio)	Intra-measurements	2	628.031	314.015	433.536*
		Inter-measurements	57	41.286	0.724	
		Total	59	669.317		
4-	Mental imagery (motor)	Intra-measurements	2	456.494	228.247	836.069*
		Inter-measurements	57	15.547	0.273	
		Total	59	472.041		
5-	Mental imagery (emotional)	Intra-measurements	2	1084.142	542.071	530.676*
		Inter-measurements	57	58.224	1.021	
		Total	59	1142.366		
6-	Mental imagery and imagination ability	Intra-measurements	2	890.652	445.326	581.551*
		Inter-measurements	57	43.648	0.766	
		Total	59	934.300		
7-	Attention	Intra-measurements	2	287.061	143.530	568.337*
		Inter-measurements	57	14.395	0.253	
		Total	59	301.456		

F tabulated on FD 2 and 57 and p=0.05 = 3.17

Table 3: L.S.D test for the least variance significance among measurements (pre/intermediate/post) for the mental ability variable under investigation

				Mean differences			
Variable		Measurement	Mean	Pre-	Intermediate	Post-	L.S.D
1-	Muscle tension (trunk - face - legs)	Pre-	63.96		15.11*8	25.11*8	1.35
	relaxation ability	Intermediate	48.85			10*?	
		Post-	38.85				
2-	Mental imagery (visual)	Pre-	11.38		6.10*	8.81*8	0.26
		Intermediate	17.48			2.71*8	
		Post-	20.19				
3-	Mental imagery (audio)	Pre-	10.86		4.40*8	7.93*8	0.52
		Intermediate	15.26			3.53*8	
		Post-	18.79				
4-	Mental imagery (motor)	Pre-	10.66		4.01*8	10.12*8	0.32
		Intermediate	14.67			6.11*8	
		Post-	20.78				
5-	Mental imagery (emotional)	Pre-	11.29		5.32*8	10.43*8	0.62
		Intermediate	16.61			5.11*8	
		Post-	21.72				
6-	Mental imagery and imagination ability	Pre-	11.44		4.11*8	9.42*8	0.53
		Intermediate	15.55			5.31*8	
		Post-	20.86				
7-	Attention	Pre-	6.58		1.09*8	5.10*8	0.31
		Intermediate	7.67			4.01*8	
		Post-	11.68				

Table 3 indicated statistically significant differences among the three measurements (pre/intermediate/post) for the mental ability variable.

Table 4: Improvement percentages among the three measurements (pre/intermediate/post) for the mental ability variable

Variable		Measurement	Mean	Improvement Percentage (%) Pre-	Intermediate	Post-
1-	Muscle tension (trunk - face - legs) relaxation ability	Pre-	63.96		23.62	39.26
		Intermediate	48.85			20.47
		Post-	38.85			
2-	Mental imagery (visual)	Pre-	11.38		53.60	77.42
		Intermediate	17.48			15.50
		Post-	20.19			
3-	Mental imagery (audio)	Pre-	10.86		40.25	73.02
		Intermediate	15.26			23.13
		Post-	18.79			
4-	Mental imagery (motor)	Pre-	10.66		37.62	94.93
		Intermediate	14.67			41.65
		Post-	20.78			
5-	Mental imagery (emotional)	Pre-	11.29		47.12	92.38
		Intermediate	16.61			30.76
		Post-	21.72			
6-	Mental imagery and imagination ability	Pre-	11.44		35.93	82.34
		Intermediate	15.55			34.15
		Post-	20.86			
7-	Attention	Pre-	6.58		16.57	77.51
		Intermediate	7.67			52.28
		Post-	11.68			

Table 5: Variance significance among the three measurements (pre/intermediate/post) for the technical performance variable under investigation

Variable		Source of variance	DF	Sum of Squares	Mean Squares	F
1-	Slow backward dive (preliminary coordination)	Intra-measurements	2	770.871	385.436	503.866*
		Inter-measurements	57	43.603	0.765	
		Total	59	814.474		
2-	Slow backward dive (good coordination)	Intra-measurements	2	738.396	369.198	736.884*
		Inter-measurements	57	28.558	0.501	
		Total	59	766.954		
3-	Slow backward dive (auto coordination)	Intra-measurements	2	1014.188	507.094	299.054*
		Inter-measurements	57	96.653	1.696	
		Total	59	1110.841		
4-	Total	Intra-measurements	2	7530.586	3765.293	1254.071*
		Inter-measurements	57	171.140	3.002	
		Total	59	7701.726		

F tabulated on FD 2 and 57 and p#0.05 = 3.17

Table 6: L.S.D test for the least variance significance among measurements (pre/intermediate/post) for the technical performance variable under investigation

Variable		Measurement	Mean	Mean differences Pre-	Intermediate	Post-	L.S.D
1-	Slow backward dive (preliminary coordination)	Pre-	6.72		3.42*8	8.72*8	0.53
		Intermediate	10.14			5.30*8	
		Post-	15.44				
2-	Slow backward dive (good coordination)	Pre-	7.59		3.32*8	8.52*8	0.43
		Intermediate	10.91			5.20*8	
		Post-	16.11				
3-	Slow backward dive (auto coordination)	Pre-	8.61		4.12*8	10.02*8	0.80
		Intermediate	12.73			5.90*8	
		Post-	18.63				
4-	Total	Pre-	22.93		10.86*8	27.26*8	1.07
		Intermediate	33.79			16.40*8	
		Post-	50.19				

Table 6 indicated statistically significant differences among the three measurements (pre/intermediate/post) for the technical performance variable.

Table 7: Improvement percentages among the three measurements (pre/intermediate/post) for the technical performance variable

Variable		Measurement	Mean	Improvement Percentage (%)		
				Pre-	Intermediate	Post-
1-	Slow backward dive (preliminary coordination)	Pre-	6.72		50.89	129.76
		Intermediate	10.14			52.27
		Post-	15.44			
2-	Slow backward dive (good coordination)	Pre-	7.59		43.74	112.25
		Intermediate	10.91			47.66
		Post-	16.11			
3-	Slow backward dive (auto coordination)	Pre-	8.61		47.85	116.38
		Intermediate	12.73			46.35
		Post-	18.63			
4-	Total	Pre-	22.93		47.36	118.88
		Intermediate	33.79			48.54
		Post-	50.19			

It indicated differences in the percentage of variance among some measurements.

This indicates the importance of mental training in improving the educational process through out learning phases.

Tables 5-7 presented results of technical performance affecting the skill under investigation as a result of mental training during the motor learning phases of the low backward dive with one leg after another. Table 5 indicated statistically significant differences among mean measurements on p=0.05 as F tabulated value were 3.17. This was under the calculated values ranging from 299.054 for slow backward dive (auto coordination) to 736.884 for slow backward dive (good coordination) and this led the researcher to perform L.S.D test for the least variance significance among measurements. Table 6 indicated statistically significant differences among the three measurements (pre/intermediate/post) for the technical performance variable on L.S.D test as the minimal value was 0.43 for slow backward dive (good coordination) and the maximum value was 0.80 slow backward dive (auto coordination). This indicates statistically significant difference among the three measurements in favor of the post-measurement. Table 7 indicated improvement percentages among the three measurements (pre/intermediate/post) for the technical performance variable. It indicated that variance percentage on all technical performance variables ranged between 43.74% as a minimal value for slow backward dive (good coordination) and the maximum value was 129.76% slow backward dive (preliminary coordination). This indicated that significant differences are in favor of the post-measurement.

The researcher thinks that merging mental training into the educational program during the training unit makes the student more positive as this approach is very close to real performance in exams. Performance requires that the student should concentrate on appropriate performance then on performance fluency and finally suitable relaxation to perform the task in time. Therefore, performance with mental training is turned into a task to be achieved through the student's own abilities without thinking of the exam as an obstacle in itself which leads the student to be psychologically disturbed. The researcher thinks that these results are due to the recommended mental training program through learning phases as the researcher did not consider that mental skills are limited to elite performers alone as beginners can benefit from it as well [3,4,7,8,11, 9]. It is note worthy that the beginner needs some modifications for such knowledge, with a little number of objectives and shorter training units durations with simple and clear verbal instructions. It is very important to integrate mental skills with motor skills [16].

CONCLUSION

The researcher concluded that the recommended educational program with mental training had a positive effect on the motor learning phases of the slow backward dive with one leg after another among the three measurements in favor of the post- measurement.

The mental training had a positive effect on the motor learning phases of the slow backward dive with one leg after another among the three measurements in favor of the post- measurement.

Recommendation: The researcher recommends the application of the educational program with mental training for students with special consideration of each learning phase conditions as it has a positive effect on improving performance level.

REFERENCES

1. Shamoun, M.A., 1996. Mental training in sports. Dar Al-Fikr Al-Araby, Cairo, Egypt, pp: 31-32. (in Arabic).
2. Allawy, M.H., 1990. Sports Training. Dar Al-Maaref, 11th Ed. Cairo, Egypt, pp: 257. (in Arabic).
3. Lateef, M.A., 2011. Mental training with neuro-linguistic programming for developing thinking strategies and performance effectiveness for some individual sports. Ph.D. Thesis, Faculty of Physical Education for Boys, Helwan University, Egypt, pp: 8. (in Arabic).
4. Saad, A.M., 2010. Basic mental skills and the improvement of technical performance level in sports school activities for the preparatory stage. Ph.D. Thesis, Faculty of Physical Education for Boys, Helwan University, Egypt, pp: 68, 71. (in Arabic).
5. Grouies, G., 1992.The effect of mental practice on the ration time. J. Sport Behavior Mobile Ale, 15: 150.
6. Anderson, C.A., 2002.The effect of an instructional self-talk program on learning a motor skill the over hand throw dissention. Abstracts International, pp: 186.
7. Yaseen, R.S., 1998. Effects of a mental training program on improving the performance level of inside crouch on the jumping horse. Master thesis, Faculty of Physical Education,Tanta University, Egypt, pp: 10. (in Arabic).
8. Shamoun, M.A. and M. Ismaeel, 1983. Effects of a mental training program on the performance level of the jumping horse for students of the Faculty of Physical Education. Journal of Studies and Research, Faculty of Physical Education for Boys, Helwan University, Egypt, 4: 248. (in Arabic).
9. Ahmed, N.A., 1987. Effects of a mental training program on improving the performance level on the balance beam. Master thesis. Faculty of Physical Education, Zagazig University, Egypt, pp: 71-72. (in Arabic).
10. Yousef, A.A., 1997. Approaches in teaching and coaching gymnastics. Dar Al-Maaref, Cairo, Egypt, pp: 6. (in Arabic).
11. Ahmed, N.A., 1995. Effectiveness of using an educational portfolio on the cognitive acquisition of Slow backward dive with one leg after another. Journal of Studies and Research, Faculty of Physical Education for Girls, Alexandria University, Egypt, pp: 27. (in Arabic).
12. Saleh, A.Z., 1986. Educational Psychology. Nahdat Misr Press, 10th Ed. Cairo, Egypt, pp: 2-12. (in Arabic).
13. Yaseen, R.S., 1998. Effects of a mental training program with an educational portfolio on learning some gymnastics skills for students of the faculty of education - Tanta University. Ph.D. Thesis, Faculty of Physical Education,Tanta University, Egypt, pp: 45. (in Arabic).
14. Crespo, M. and D. Mile, 2002. ITF, Advanced Coach Manual, pp: 106.
15. Wolframm, I.A. and D. Micklewright, 2011. The effect of a mental training program on state anxiety and competitive dressage performance. Journal of Veterinary Behavior: Clinical Applications and Res., 6: 267-275.
16. Weinberg, R.S., 1998. The mental advantage developing your psychological skills in tennis. Leisure press, Chanpaigh, Illiois, pp: 276-279.