Mental toughness and its relationship to facing the psychological stresses of the female beginners in swimming

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Research Summary

The research aims to identify the effect of a psychological education program on the level of achievement of the beginners of swimming using the experimental method by designing two groups, one of which is experimental and the other is control, (20) juniors for the experimental group, (20) juniors for the control group and (20) juniors for the pilot group and the most important results are statistically significant differences between the pre and post measurements of the control and experimental groups in the variables of the level of achievement of the butterfly stroke in favor of the post measurements of both groups with the superiority of the post measurements of the experimental group compared to the control group. This pushes us to recommend conducting more psychological programs in different sports and the use of other psychological skills commensurate with the type of sports activity and nature of the sample.

Introduction and problem of the research :

The difference in swimming from other sports, where the difference in the medium practiced and the position of the horizontal body, which makes this environment different from others with a great psychological impact on the beginner and where the growing interest in sports psychology as it is considered one of the important sciences in order to get benefit of its subjects, theories and application. This contributes to the speed of response, learning and excellence in sports competitions.

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Mohamed Al-Arabi Shamoun (2001) points out that the development and teaching of psychological skills must go hand in hand with the development of physical fitness elements. Psychological and mental skills must be planned for development such as skills and physical elements. Integration in preparation, especially in the early stages, Physical and mental skills, as well as mentality and emotionality, and the omission of such preparation hinders achievements at the competitive level. (7: 362)

Michael Johnson et al. (2006) mentions that the swimmer's possession of psychological skills is a natural psychological edge that enables him to perform consistently and better than his competitors while retaining confidence, flexion, control, focus and insistence under pressure. (6: 803).

Jolly Ray (2003) points out that the instability of performance during competitions is mainly due to psychological factors, which are mainly the lack of concentration of attention, loss of self-confidence, frustration and surrender when feeling stressed. An junior swimmer with psychological skills can perform consistently, taking into account that psychological skills can be learned as they are acquired traits, not genetic traits. The swimmer who has as psychic abilities and the ability to cope with stress and positive thinking, is capable of winning, as excessive thinking or negative thinking directly affects the outcome of the race (4: 9).

As the butterfly stroke is one of the difficult and complex strokes, where the swimming instructor finds it difficult to acquire its motion scheme to the beginner, as butterfly Swim technique is developed from breast stroke technique and the pioneer of this development was David Armbruster, the swimming instructor at the University of Iowa in 1934. He tried to get a better shape for the retrograde stage of the two arms in the chest stroke, where this stage is under the water and this may subject the two arms to more resistance resulting from the friction with water, he modified the path of the retrograde movement of the two arms, as it became outside the water and this technique

was called (Butterfly), which led to the difficulty of learning the motion and despite of the difficulty of this method, it has achieved an increase in speed, which makes us care to put it under the study and development of its practitioners so that they do not fall under other pressure (Physiological stress, for example) during learning, which helps to speed learning and master that method of swimming.

In addition to the fact refers to the care of swimming instructors and trainers about the physical, technical and planning without any consideration of psychological skills. It has an impact to conduct this study to identify the impact of psychological education program on the mental toughness and its relationship to face the psychological pressures of female beginners in swimming

The significance of research and the need: Trying to know the extent of the benefit of trainers, psychologists and swimming beginners of mental and psychological preparation of the educational program, which aims to raise the level of swimmer on the psychological side as well as the physical and skilled aspect. It helps the beginner to face difficulties, overcome them, insist and struggle during the most difficult moments of competition.

Aim of the research: To identify the impact of psychological education program for mental toughness and its relationship to face the psychological pressures of beginners in swimming.

Research hypotheses:

1. There are statistically significant differences between pre and post measurements of the control group in the variables of the level of achievement of the butterfly swimming and in favor of the post measurement.

2. There are statistically significant differences between pre and most measurements of the experimental group in the psychological variables and the level of achievement of the butterfly swimmer and in favor of the post measurement.

3. There are statistically significant differences between the two post measurements of the control and experimental group in the psychological variables and the level of achievement of the butterfly

swimmer and in favor of the experimental group.

Procedures of the research:

Research Methodology: The quasi-experimental Curriculum was used by designing the two groups, one group is experimental and the other one is control by following the pre and post measurements of the two groups (experimental and control).

Sample of the research: The sample of the research was chosen by the deliberate method of swimmers of Mansoura Sports Stadium, registered with the Egyptian Swimming Federation, aged 10-12 years, randomly divided into two equal groups, one of which is control and the other is experimental, each group consists of (20) beginners and the table no.(1) shows that.

Table (1)

Statistical description of population and sample of the research

S	Description	Sample	Number	Percentage
1	Control group	Primary	20	28.871%
2	Experimental group		20	28.571%
3	Pilot group	Pilot	20	28.571%
4	Excluded	10		14.287%
5	Total population of the research	70		100%

Normality of the research's sample distribution:

Pre measurements were carried out to ensure that the members of the research sample were under the normal curve in the variables selected and identified after reviewing the previous studies and the scientific references and the opinion of the supervisors and experts on the research. They are represented in: Basic measurements and includes the variables of growth (Chronological age-time-length-weight-age-training age)- physical qualities tests.- Tests of achievement level.- Psychometric measure.

Table (2)

Mean, standard deviation, median and coefficient of skewness in some variables under study n = 40

	Variables-tests	Unit of measurement	Mean	Median	Standard deviation	Coefficient of skewness

Primary Growth variables	Chronological age	Year	11.11	11.00	0.581	0.118
	Length	cm	139.07	139.0	3.316	0.308
	Weight	kg	40.028	40.00	2.595	0.033
	Training age	Year	2.888	3.000	0.657	-0.166
Physical	Shoulder joint flexibility test	cm	29.350	29.00	1.511	0.068
	Foot joint Shoulder joint flexibility test	cm	9.35	9.020	0.171	2.128
	Trunk flexibility in the standing position test	cm	5.135	5.090	0.120	2.120
	Pushing a medical ball weighs 3 kg	Meter	1.619	1.635	0.239	-0.706
	Standing board jump	Meter	157.45	157.0	1.825	0.138
	Sit-up and bending the knees in (1 min)	Number	37.075	37.00	1.542	-0.176
	Numbered circles test	Second	6.500	6.000	1.301	0.176
	Running in &	Second	8.134	8.55	0.319	0.1165
Physiological	Ability to face pressure	Mark	6.775	7.000	0.800	0.438
	Self confidence	Mark	6.375	6.000	0.628	0.174
	Attention concentration	Mark	6.57	6.00	0.675	0.76
	Speed of return to the normal case	Mark	6.62	7.00	0.70	-0.22
	Achievement motivation	Mark	0.645	0.600	0.84	0.29
	Total	**Mark**	**32.80**	**33.00**	**1.48**	**0.081**

Level of (technical) achievement	Beginning dive	Mark	6.45	6.00	1.80	0.78
	First 25 m	Mark	3.47	4.00	0.78	-1.08
	Flip turn	Mark	5.95	6.00	1.60	-0.36
	Second 25 m	Mark	3.30	4.00	0.96	-0.65
	End	Mark	3.40	3.00	1.44	0.064
	Total	**Mark**	**22.97**	**23.00**	**2.50**	**0.21**
Level of numerical achievement		Second	47.78	47.90	3.94	0.70

It became clear from Table (2) that all the values of the calculated coefficients of skewness ranged between (0.841: -0.034) and all these values are limited to (± 3) indicating that the sample of the research falls under the normal curve of these variables.

Scientific factors of the Scale (Validity-Reliability)

The validity of comparison of extreme groups was used to verify the validity of the tests. This is done through the sequence of the pilot group in descending order and then the upper quartile is compared to the lower quartile of the sample of the respondents under research. The reliability factor is calculated by (Test-Retest) application method on the same pilot sample as mentioned previously and drawn from the search's population and outside the primary sample of the research with time interval of (15) days between the first application and the second application. The statistical treatments confirmed the validity and stability of the test

Basic Study:

The tests were carried out from 5/7/2016 until 13/7/2016. The physical tests, the psychological scale and the level of achievement of the experimental and control groups were applied for the purpose of equivalence between the two groups of the research in these variables, as shown in the following table.

Table (3)

Mean, standard deviation, t-value between the experimental and control groups in the pre measurements of the research variables 1=N2=20

	Variables	Unit of measurement	Control group		Experimental group		T value	Level of significance
			Medan	Standard deviation	Mean	Standard deviation		
Primary variables	Chronological age	Year	10.98	0.65	11.24	0.47	1.40	1.69
	Length	cm	138.55	3.51	0.139	3.10	1.00	0.32
	Weight	kg	39.52	2.90	40.53	2.19	1.23	0.22
	Training age	Year	2.85	0.63	2.92	0.69	0.30	0.75
Physical	Shoulder joint flexibility test	cm	29.25	1.37	29.45	1.66	0.41	0.68
	Foot joint flexibility test	cm	9.07	0.21	8.99	0.10	1.64	0.10

Follow Table (3)

Mean, standard deviation, t-value between the experimental and control groups in the pre measurements of the research variables 1=N2=20

	Variables	Unit of measurement	Control group		Experimental group		T value	Level of significance
			Medan	Standard deviation	Mean	Standard deviation		

	Trunk flexibility in the standing position test	cm	5.15	0.12	5.11	0.11	0.86	0.41
	Pushing a medical ball weighs 3 kg	Meter	1.59	0.22	1.64	0.25	0.75	0.54
	Standing board jump	Meter	157.10	1.44	157.80	2.11	1.22	0.23
	Sit-up and bending the knees in (1 min)	Number	37.35	1.42	36.80	1.64	1.13	0.26
	Numbered circles test	Second	6.30	0.08	6.70	1.65	0.97	0.33
	Running in &	Second	8.13	0.32	8.13	0.32	0.07	0.94
Physiological variables	Ability to face pressure	Mark	6.90	0.78	6.65	0.81	0.98	0.33
	Self confidence	Mark	6.40	0.59	6.35	0.67	0.24	0.80
	Attention concentration	Mark	6.50	0.68	6.65	0.67	0.69	0.48
	Speed of return to the normal case	Mark	6.70	6.65	6.55	0.75	0.66	0.50
	Achievement motivation	Mark	6.65	0.87	6.25	0.78	1.52	0.13
	Total	**Mark**	**33.15**	**1.49**	**32.45**	**1.43**	**1.51**	**0.13**
Skillful and technical level of achievement	**Beginning dive**	Mark	6.90	1.88	6.80	1.76	0.17	0.86
	First 25m	Mark	3.40	0.75	3.55	0.82	0.60	0.55
	Flip turn	Mark	6.10	1.77	5.80	1.43	0.57	0.56
	Second 25m	Mark	3.40	0.94	3.20	1.00	0.65	0.52
	End	Mark	3.20	1.32	3.60	1.56	0.87	0.38
	Total	**Mark**	**23.00**	**2.12**	**22.95**	**2.89**	**0.02**	**0.95**
Level of numerical achievement		**Second**	**57.70**	**3.96**	**57.86**	**4.02**	**0.12**	**0.90**

The value of the table "T" at a significant level of 0.05 = 2.048

it became clear from the table (3) the equivalence of the two research groups and after ensure the the equivalence of the two research groups in the variables under research, the proposed educational program was applied to the experimental group without the control in the period from (30/07/2016AD) to (26/10/2016AD) for a period of twelve weeks and by three weekly educational units and the main part time is thirty minutes. The program was implemented with the control group and after the

implementation of the physiological education, the post measurement was carried out on the experimental and control groups as the scale of mental toughness and level of achievement have carried out. The data have been entered in tables prepared for this purpose in order to be addressed statistically.

Presentation and discussion of the results:

First: Presentation and discussion of the results of the control group: n = 20

	Variables	Unit of measurement	Control group		Experimental group		T value	Level of improvement
			Medan	Standard deviation	Mean	Standard deviation		
Physiological variables	Ability to face pressure	Mark	6.90	0.68	7.85	0.98	3.04*	13.76%
	Self confidence	Mark	6.40	0.59	7.40	1.14	3.00*	15.26%
	Attention concentration	Mark	6.50	0.68	7.75	1.16	3.77*	19.23%
	Speed of return to the normal case	Mark	6.70	6.65	7.45	1.05	2.51*	11.19%
	Achievement motivation	Mark	6.65	0.87	7.25	1.20	2.17*	9.02%
	Total	**Mark**	**33.15**	**1.49**	**37.70**	**3.11**	**5.83***	**13.72%**
Level of (Skillful) technical achievement	First 25m	Mark	3.40	0.75	8.80	1.36	16.09*	85.82%
	Flip turn	Mark	6.10	1.77	8.50	1.10	6.43*	39.34%
	Second 25m	Mark	3.40	0.94	7.30	0.97	11.48*	114.70%
	End	Mark	3.20	1.32	2.30	0.47	2.85*	28.12%
	Total	**Mark**	**23.00**	**2.12**	**37.00**	**2.40**	**29.09***	**60.87%**
Level of numerical achievement		**Second**	**47.70**	**3.96**	**40.39**	**2.325**	**2.32***	**2.26%**

It became clear from Table (4) that there are statistically significant differences between the pre and post measurements of the control group in the variables of the level of achievement of the butterfly stroke and in favor of the post measurements. These results agree with **Mohamed Hassan Allawi (200٠)(٩)** that when the teacher is asks the junior to perform a new motor skill, he has never learned or trained to do it before, it is expected that the junior may fail to perform this skill, which applies fully when asking the junior to focus or relax or emotional control.

Second: Presentation and discussion of the results of the experimental group:

Table (5)

Mean, standard deviation and t-value between the two pre and post measurements of the experimental group in the search variables = 20

	Variables	Unit of measurement	Control group		Experimental group		T value	Level of improvement
			Medan	Standard deviation	Mean	Standard deviation		
Physiological variables	Ability to face pressure	Mark	6.65	0.81	10.25	0.78	18.24*	54.13%
	Self confidence	Mark	6.35	0.67	9.95	0.75	16.18*	56.69%
	Attention concentration	Mark	6.57	0.60	9.73	0.73	15.32*	48.00%
	Speed of return to the normal case	Mark	6.55	0.75	9.60	0.59	14.44*	46.56%
	Achievement motivation	Mark	6.25	0.87	9.75	0.71	15.65*	56.00%
	Total	**Mark**	**32.4**	**1.43**	**48.80**	**2.68**	**22.07***	**50.38%**
Level of (Skillful) technical achievement	Beginning dive	Mark	6.80	1.76	11.50	0.88	10.10*	69.11%
	First 25m	Mark	3.55	0.82	10.090	1.02	25.11*	207.0%
	Flip turn	Mark	5.50	1.43	9.95	0.22	12.70*	71.55%
	Second 25m	Mark	3.20	1.005	9.85	1.040	19.42*	207.8%
	End	Mark	3.60	1.56	2.05	0.22	4.23*	43.05%
	Total	**Mark**	**22.95**	**2.89**	**44.10**	**1.65**	**27.15***	**92.15%**
Level of numerical achievement		**Second**	**47.86**	**4.02**	**38.56**	**1.746**	**9.60***	**14.34%**

The value of the "T" table at a significant level 0.05 = 2.093 * = Significance

It is clear that there are statistically significant differences between the pre and post measurements of the experimental group in the variables under research, in line with **Al-Arabi Shamoun (2001), (10)** and **Garry Kuan & Joll Roy (2007)** ,(2) and **Haglind (2004)(3), Chung Chong (1)** that the development of psychological skills must go hand in hand with the skillful and technical aspects as mental perception helps to exclude negative thinking, give more support and confidence, build patterns of positive performance and achieve goals whereas the level of achievement is linked to the skills of self-confidence, motivation and ability to face pressure.

Table (6)

Mean, standard deviation and t-value between the experimental and control groups in the post measurements of the research variables, n = 20

First: Presentation and discussion of the results of the control group: n = 20

	Variables	Unit of measurement	Control group		Experimental group		T value	Level of improvement
			Medan	Standard deviation	Mean	Standard deviation		
Physiological variables	Ability to face pressure	Mark	7.85	0.988	10.250	0.786	8.49*	40.36%
	Self confidence	Mark	7.40	1.142	9.95	0.75	8.31*	41.06%
	Attention concentration	Mark	7.75	1.16	9.73	0.73	6.33*	28.76%
	Speed of return to the normal case	Mark	7.45	1.05	9.60	0.59	7.95*	35.37%
	Achievement motivation	Mark	7.25	1.20	9.75	0.71	7.95	46.97%
	Total	**Mark**	**37.70**	**3.11**	**48.80**	**2.68**	**12.07**	**36.66%**
Level of (Skillful) technical achievement	First 25m	Second	10.10	1.37	11.50	0.889	3.82	22.74%
	Flip turn	Second	8.80	1.36	10.90	1.02	5.52	48.21%
	Second 25m	Second	8.50	1.10	9.95	0.22	5.77*	32.20%
	End	Second	7.30	0.97	9.85	1.04	7.98*	93.10%
	Total	**Second**	**37.0**	**2.40**	**44.10**	**1.65**	**10.88***	**31.28%**
Level of numerical achievement		**Second**	**40.39**	**2.325**	**38.561**	**1.746**	**8.96***	**10.33%**

The value of the "T" table at a significant level of 0.05= 2.048*= Significance

There are statistically significant differences in favor of the experimental group. The findings of this study agree with the study of **Magda Ismail & Gehan Fouad (200٦)** (5) and the study of **Stephen Waples (2003) study**(11) agreed that the mental toughness can be learned and developed through psychological skills because of the positive impact of the psychological educational program, which helped the sample in the study to understand the nature of the skill and focus on the goal to be achieved as well as isolating the negative stimuli and psychological pressure, which in turn affect the level of achievement.

Conclusions:

There are statistically significant differences between the pre and post measurements of the control and experimental groups in the variables of the level of achievement of the butterfly swim in favor of the post measurements of both groups. There are also statistically significant

differences between the two post measurements of the control and experimental groups in the psychological variables and the level of completion of the butterfly stroke in favor of the experimental group.

Recommendations:

Attention to psychological preparation programs as well as the rest of the physical and skill programs affecting the educational process and training in addition taking into account the mental and psychological skills characteristic of each swimmer.

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