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Impact of swimming training on life strain comfort

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Abstract

The purpose of this study is to explore the impact of swimming training on reducing life tension by means of survey questionnaire. The target group was the members from Dr. S.P. Mukherjee Swimming Stadium, New Delhi. Zung Self-Rating Depression Scale (SDS) was used to score the members' life strain before and after swimming training. Data analysis included both descriptive statistical methods and paired sample t-test. This study has reached two conclusions as follows: (1) Males aged 20-34 with an occupation are usually night swimmers. (2) Swimming helps relieve life strain. This study thus recommended people to do swimming training in order to effectively reduce stresses in their lives.

Keywords: Swimming training, life strain.

1. Introduction

Swimming is the self-propulsion of a person through water or another liquid, usually for the purpose of recreation, sport, exercise, or survival. Locomotion is achieved through coordinated movement of the limbs, the body, or both. Humans are able to hold their breath underwater and undertake rudimentary locomotive swimming within weeks of birth, as an evolutionary response.

Swimming is consistently found to be among the top recreational activities undertaken by the public, and in some countries, swimming lessons are a compulsory part of the educational curriculum. As a formalized sport, swimming features in a range of local, national, and international competitions, including every modern summer Olympics, which occurs every four years.

Swimming relies on the natural buoyancy of the human body. On average, the body has a relative density of 0.98 compared to water, which causes the body to float. However, buoyancy varies on the basis of both body composition and the salinity of the water. Higher levels of body fat and saltier water both lower the relative density of the body and increase its floatation.

Since the human body is only slightly less dense than water, water supports the weight of the body during swimming. As a result, swimming is "low-impact" compared to land activities such as running. The density and viscosity of water also create resistance for objects moving through the water. Swimming strokes use this resistance to create propulsion, but this same resistance also generates drag on the body.

This means that hydrodynamics are an important factor in stroke technique in terms of swimming faster, and swimmers wishing to swim faster, or wishing to tire less, will try to reduce the drag caused by the body's motion through the water. In order to be more hydrodynamic, swimmers can either increase the power of their strokes or reduce their water resistance, although increasing power to overcome resistance needs to increase by a factor of three to achieve the same effect as reducing resistance.

Efficient swimming by reducing water resistance involves having a horizontal water position, rolling the body in order to reduce the breadth of the body in the water, and extending the arms as far as possible in order to reduce wave resistance.

There are many reasons why people swim, from swimming as a recreational pursuit to swimming as a necessary part of a job or other activity. Swimming may also be used to rehabilitate injuries, especially various cardiovascular injuries and muscle injuries.

Many swimmers swim for recreation, with swimming consistently ranking as one of the physical activities people are most likely to take part in.

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Recreational swimming can also be used for exercise, relaxation, or rehabilitation. The support of the water, and the reduction in impact, makes swimming accessible for people who are unable to undertake activities such as running.

Swimming is primarily a cardiovascular/aerobic exercise due to the long exercise time, requiring a constant oxygen supply to the muscles, except for short sprints where the muscles work anaerobically. As with most aerobic exercise, swimming is believed to reduce the harmful effects of stress. Swimming is also effective in improving health for people with cardiovascular problems and chronic illnesses. It is proven to positively impact the mental health of pregnant women and mothers. Swimming can even improve mood.

Swimming is a healthy workout that can be done for a lifetime. It is a low-impact activity that has several mental and bodily health benefits, that is a recreational motion for everyone. Swimming can provide a low-impact workout. Swimming builds endurance, muscle strength, and cardiovascular fitness.

The US Census Bureau reports that two and a half hours per week of aerobic physical activity such as swimming can decrease the risk of chronic illnesses. Along with this, swimming is linked to better cognitive function, lower risk of type 2 diabetes, lower risk of high blood pressure, and lower risk of stroke. People are typically able to exercise longer in water than on land without increased effort, and minimal joint or muscle pain.

Stress happens when we feel that we can't cope with pressure and this pressure comes in many shapes and forms, and triggers physiological responses. These changes are best described as the fight or flight response, a hard-wired reaction to perceived threats to our survival. When survival had meant facing immediate and real threats such as confronting a charging elephant, our response has saved lives.

At times of danger, the body's innate intelligence automatically takes charge by triggering a set of changes that bypass our rational thoughts. Priority is given to all physical functions which provide more power to face an enemy or to flee. To understand why stress can have negative impacts on your health, you must first understand the physiological changes that occur within your body during the fight or flight response.

Fight or flight

The fight or flight response was first noted by one of the early pioneers in stress research, Walter Cannon. In 1932 he established that when an organism experiences a shock or perceives a threat, it quickly releases hormones that help it to survive.

In humans, as in other animals, these hormones help us to run faster and fight harder. They increase heart rate and blood pressure - delivering more oxygen and blood sugar to power important muscles. They increase sweating in an effort to cool these muscles, and help them stay efficient. They divert blood away from the skin to the core of our bodies - reducing blood loss if we are damaged. As well as this, these hormones focus our attention on the threat, to the exclusion of everything else. Breathing is accelerated to supply more oxygen for conversion to energy. The heart moves into overdrive to supply the body with more oxygen and nutrients. Our immune system is activated, ready to administer to wounds. Attention and sight become acute and

highly focused and our sense of pain is diminished as the body releases analgesic hormones.

This physiological aspect leaves us viewing the world as a hostile place and we are fully prepared to fight or run. Whichever one we choose, our body will expend an immense amount of energy which in itself prevents the build up of stress related to this response.

Modern civilisation mostly provides a shield against predators. Charging elephants are a less likely concern, unless you happen to be living the natural life in the jungle full of rampaging pachyderms. The inherent fight or flight response still resides in us but now it is triggered by different, seemingly less life threatening events. Many day-to-day situations can set it off - a change of home, a difficult boss, divorce, separation, demanding children, traffic jams, the fear of terrorism etc.

The more often we are exposed to these types of stressors, the more overactive our fight or flight response becomes until we find ourselves operating at fever pitch level, constantly prepared for battle, perceiving potential threats everywhere. That is why people who are over stressed not only show physiological symptoms such as high blood pressure, rapid heart rate or shallow fast breath; they can seem overly sensitive or aggressive. Today many of us don't take enough physical exercise to 'burn off' the effects of our response and we're left with stress build up. We learn to control our reactions, but this does not counteract the stress response.

Life-threatening events are not the only ones to trigger this reaction. We experience it almost any time we come across something unexpected or something that frustrates our goals. When the threat is small, our response is small and we often do not notice it among the many other distractions of a stressful situation.

Methodology

Subject and scope

The subject of the study aims at members who participated in swimming exercise at Dr. S.P. Mukherjee Swimming Stadium, New Delhi.

Research Tool

This study adopts questionnaire survey using Zung Self-Rating Depression Scale (SDS) designed by Zung in 1965. The value of Cronbach's α under 0.81 is generally acceptable. Ten positive questions and ten negative questions are randomly arranged in the questionnaire. Each question is scored on a scale of 1 to 4. The sum of the score should be between 20 and 80. Score 20-39 is Normal Range; 40-47 is Mildly Depressed; 48-57 is Moderately Depressed; 56 and above is Severely Depressed.

Survey Execution

Questionnaires were dispatched on a daily basis from 6 pm to 9 pm, July 15th 2012 to July 20th 2012. Members consented to fill out an SDS (pre-test) before entering the pool whilst coming to Dr. S.P. Mukherjee Swimming Stadium, New Delhi. The subjects were then asked to complete another SDS (post-test) with the same questions after finishing swimming. There were 137 members filling out the questionnaires. Having screened out 17 incomplete questionnaires, we received a total of 120 complete questionnaires. (Finishing a pre-test and a post-test SDS is accounted for one complete questionnaire.)

Results

Demographic Analysis

Among a total of 137 questionnaires recovered, 120 shares are valid questionnaires shown as Table 1. Participants include 78 males and 42 females with respective percentage of 65% and 35%. Age group 20-26 has 54 subjects (45%), and 66 out of 120 subjects (55%) are aged between 27 and 34. Working in the business sector has 47 subjects (39.16%), industrial sector has 22 subjects (18.33%), and service sector has 51 subjects (42.50%). 24 subjects are in schools, 41 subjects were graduated from colleagues, and over 55 subjects were graduated from universities with the share of 20%, 34.16% and 45.84% respectively.

Table 1: Demographic Analysis of the Subjects

Variable	Group	Persons	Percentage (%)
Gender	Male	78	65%
	Female	42	35%
Age	20-26	54	45%
	27-34	66	55%
Occupation	Business Sector	47	39.16%
	Industrial Sector	22	18.33%
	Service Sector	51	42.50%
Education	School	24	20%
	College	41	34.16%
	University	55	45.84

Status of Cognitive Life Stress before and After Swimming

This study adopted questionnaire survey (pre-test and post-test) using Zung Self-Rating Depression Scale (SDS) to investigate the possibility of reducing stress by participating in swimming exercise. Members of Dr. S.P. Mukherjee Swimming Stadium are consented to participate in this survey whilst coming to Dr. S.P. Mukherjee Swimming Stadium, New Delhi. They would fill out an SDS (pre- test) before entering the pool, and another SDS (post-test) with the same questions after finishing swimming.

Table 2: Depressed Status of Subjects on Cognitive Life Stress before and after Swimming

Status	Before	After
Normal (score 20-39)	47	69
Mildly Depressed (score 40-47)	12	32
Moderately Depressed (score 48-57)	52	13
Severely Depressed (score 56 and above)	9	6

Table 2 shows the number of subjects and their scores on the cognitive life stress before and after swimming. There were 47 subjects fell in the Normal range, 12 subjects felt mildly depressed, 52 subjects felt moderately depressed, and 9 subjects felt severely depressed in cognitive life stress before swimming. The statistics illustrated that the subjects were mildly depressed before swimming exercise. After swimming, the subjects who have already changed dry clothes were asked to fill out another questionnaire (post-test) with the same questions. 69 subjects felt normal, 32 felt mildly depressed, 13 felt moderately depressed, and only 6 felt severely depressed. The statistics displayed that the subjects felt less depressed after swimming training.

Discussion and Conclusions

Discussion

This study has found that males tend to participate in swimming training more often than females do among the

subjects, which corresponds with the previous research conducted in indoor heated swimming pools, where females were relatively reluctant to go swimming than males were possibly because of family responsibility or less confidence in their body shapes. The age distribution, mostly between 27 and 34, in this study might be influenced by the time the survey was conducted and the subjects' willingness to fill out the questionnaires. All the subjects had a job

The score of cognitive life stress before swimming exercise showing mildly depressed represented that the public has felt stressed living in a fast-paced society. Compared with the score obtained after swimming exercise, the result showed that the number of subjects feeling moderately depressed decreased by 39 people from 52 to 13 people. The number of subjects who felt severely depressed before swimming exercise also fell from 9 to 6 after swimming exercise. The findings in this study, where people participating in swimming exercise believed that cognitive life stress could be greatly reduced via swimming exercise.

Conclusion and Suggestion

To sum up, this study has reached the two conclusions as follows. (a) Night swimmers are usually males aged between 27 and 34. (b) Participating in swimming exercise helps improve life stress, and has positive effects on the participants' mental health. Therefore, it is recommendable that people do swimming exercise to reduce stress. Since the research conducted in this study only focuses on a single participation in swimming exercise, it is advisable that future research continue to explore the connection between stress and swimming frequency further.

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