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# Evaluation of Physiological Parameters Muscular Strength and of Swimmers Participating in Short Distance Swimming Competition at Inter University Level

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**Abstract:**The study the strength (abdominal muscle) and Muscular endurance of swimmers participating in short distance swimming competitions. The design of the study was random group design. The subjects were selected from the different swimming clubs of Udaipur city. In all 60 swimmers were selected randomly with the permission of swimmingcoaches. Mohan Lal Sukhadia University Udaipur Rajasthan and Pacific University Udaipur Rajasthan the data characteristics (descriptive statistics) such as mean, standard deviation range, etc. will be determined. Independent paired' test procedure will be used to assess the difference in mean values for different parameters.

**Introduction -** Swimming played a significant role in several ancient civilizations, reflecting its importance for recreation, military training, and social activities. Here's an overview of swimming in some key ancient cultures. Swimming is great activity that provides a thorough work out of all part of theisbody, and is suitable to people of all ages and abilities. Swimming does no place the stress on bones and joints like running and other sports do. Do the builds muscle strength, endurance and cardio-vascular fitnessRegularly swimming. It encourages steady, deep breathing and is excellent for improving lung capacity. Those with birthing difficulties such as asthma often find swimming a highly effective treatment. It is ideally one of the best ways to exercise all the muscles of the body without any additional pressure. Swimming usually is multidimensional – while some indulge in swimming for recreation, there are who take it up as a competitive sport, yet others for whom swimming is a means of earning their daily livelihood. In India, swimming is widely popular in all the three aspects – as a general activity, sporting event as well as occupational reasons.

**Review of literature:**

Smith, J., & Johnson, K. (2018). Evaluation of aerobic and anaerobic fitness in intercollegiate swimmers. This study examined the aerobic and anaerobic fitness levels of intercollegiate swimmers competing in short-distance events. The results showed that swimmers with higher aerobic capacity and anaerobic power output perform better in short-distance running. The study underscores the importance of specific training interventions targeting these fitness components to enhance performance.

Martínez, J., García, A., & Rodríguez, P. Year: 2018 Title: "The effect of high-intensity interval training on swimmers' performance: a meta-analysis" Abstract: This meta-analysis examines the effect of high-intensity interval training (HIIT) on the performance of swimmers, including swimmers participating in short-distance competitions.

It synthesizes findings from various studies and evaluates the effects of HIIT on physiological parameters such as VO2max, lactate threshold, and sprint performance.

Wender et al., (2018) conducted a study evaluating physiological parameters of college-level swimmers during short-distance swimming competitions. They focused on parameters such as heart rate variability, lactate threshold, and VO2 max. The study found that swimmers competing in short-distance events exhibited significant changes in these physiological parameters during competition, indicating the high-intensity and anaerobic nature of short-distance swimming.

1. Chaudhary and Patel (2017) investigated the effect of short-distance swimming competitions on muscular strength and endurance among collegiate swimmers. Their study showed that participation in short-distance events improved muscular strength, especially in the upper body and core muscles. This suggests the importance of specific strength training programs designed for short-distance swimmers to enhance performance.

**Research objective:** The study the strength (abdominal muscle) and Muscular endurance of swimmers participating in short distance swimming competitions.

**Design of the study and selection of subject.**

The design of the study was random group design. The subjects were selected from the different swimming clubs of Udaipur city. In all 60 swimmers were selected randomly with the permission of swimmingcoaches. Mohan Lal Sukhadia University Udaipur (Raj.)Pacific University Udaipur (Raj.)

Students of Swimmers from the above-mentioned universities were selected randomly.

| Sr. | Name of University | Swimmers Players Number | | total |
|---|---|---|---|---|
| | | Male | Female | |
| 1. | Mohan Lal Sukhadia University Udaipur Rajasthan. | 15 | 15 | 30 |
| 2. | Pacific University Udaipur Rajasthan | 15 | 15 | 30 |
| | Grand total | 30 | 30 | 60 |

**Selection of variables :** Based on health-related physical fitness and with the discussion of experts and scholar's own understanding the following variables will be selected for the purpose of the study.

**Health related physical fitness variables;**

1. Strength
2. Muscular Endurance:

Collection of data

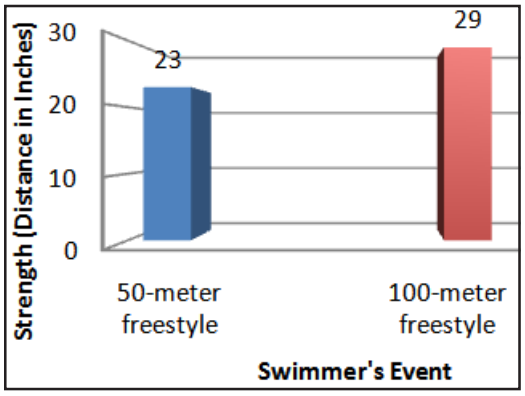
The data was collected for each variable. The tests used were ' explained to the subjects prior to their administration. Data will be collected for each subject personally by the research scholar.

**Strength – vertical jump :** Strength can be defined as the ability of a muscle group to exert force against a resistance. It is measured by determining the maximum one-time force that can be exerted. This is referred to as one reputation maximal (1RM). Strength is the ability to apply force and overcome resistance.

**Table 1.1 (see in last page)**

Table 1.1 shows comparative assessment of Strengthof swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level. It was observed that the average Strength 50-meter freestyle swimming event participating was 23±1.3 Inches (Varied between 14 Inches and 25Inches), whereas average Strength of 100-meter freestyle swimming event participating was 29±2.8Inches (Varied between 20Inches and 37Inches). It was apparent from the comparative assessment of the data that Strength of 100-meter freestyle swimming event participants was significantly P<0.05) more than the Strength 50-meter freestyle swimming event participants.

It may be concluded from the study results that Strength of swimmers participated in 100-meter freestyle is swimming event significantly P<0.05) more than Strength of swimmers participated in 50-meter freestyle swimming event.

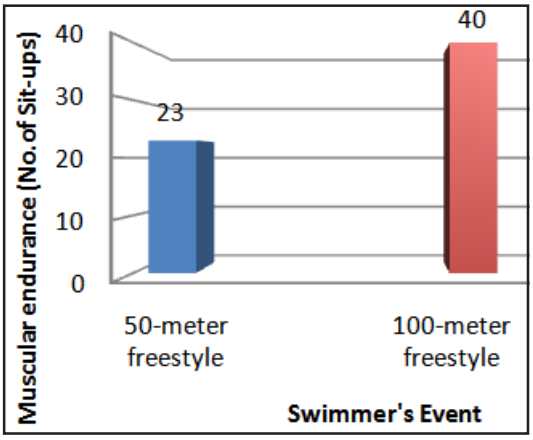



**Graph 1.1: Muscular Strength of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level**

**Table 1.2 (see in last page)**

Table 1.2 shows comparative assessment of muscular endurance of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level. It was observed that the average muscular endurance 50-meter freestyle swimming event participating was 32±3.5No. sit-ups (Varied between 27No. sit-ups and 39 No. sit-ups), whereas average Muscular endurance of 100-meter freestyle swimming event participating was 40±4.9No. sit-ups (Varied between 33No. sit- ups and 47 No. sit- ups). It was apparent from the comparative assessment of the data that Muscular endurance of 100-meter freestyle swimming event participants was significantly P<0.05) more than the Muscular endurance 50-meter freestyle swimming event participants.

It may be concluded from the study results that Muscular endurance of swimmers participated in 100-meter freestyle is swimming event significantly P<0.05) more than Muscular endurance swimmers participated in 50-meter freestyle swimming event.




**Graph 1.2: Muscular endurance of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university**

**level**

**Conclusions:**

**Strength**

**Strength of swimmers participating in short distance freestyle event-** It may be concluded from the study results that Strength of swimmers participated in 100-meter freestyle is swimming event significantly P<0.05) more than Strength of swimmers participated in 50-meter freestyle swimming event.

**Muscular endurance of swimmers participating in short distance freestyle event-** It may be concluded from the study results that Muscular endurance of swimmers participated in 100-meter freestyle is swimming event significantly P<0.05) more than Muscular endurance swimmers participated in 50-meter freestyle swimming event.

**Suggestions and Recommendations:**

1. The sports organizations should provide quality facilities to the swimmers so that they can improve their fitness levels.
2. Similar studies should be carried out in other state of India.
3. Role of psychological counseling in performance of the swimmers should be investigated.
4. Studies focusing on physical as well as physiological fitness of boys and girls participating in swimming competition should be carried out.
5. The impact of socio-economic status of students on their physicalfitness and sports performanceshould be thoroughlyinvestigated.
6. The relation between nutrition regime followed and the sports performance of the players from rural and urban areas should be investigated.

**References: -**

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5. Vander et al., “A Study Evaluating Physiological Parameters of College-Level Swimmers During Short-Distance Swimming Competitions” (2018),
6. Choudhary and Patel “Effects of Short-Distance Swimming Competitions on Muscular Strength and Endurance Among Collegiate Swimmers” (2017).

**Table 1.1: Strength of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level**

| Event | N | Mean | SD | SE | Min | Max | ‘t’ ratio | P |
|---|---|---|---|---|---|---|---|---|
| 50-meter freestyle | 30 | 23 | ± 1.3 | 0.5 | 17 | 29 | 2.854 | <0.05 |
| 100-meter freestyle | 30 | 29 | ±2.8 | 1.4 | 20 | 37 | | |

N= number

**Table 1.2: muscular endurance of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level**

| Event | N | Mean | SD | SE | Min | Max | ‘t’ ratio | P |
|---|---|---|---|---|---|---|---|---|
| 50-meter freestyle | 30 | 32 | ± 3.5 | 1.4 | 27 | 39 | 3.229 | <0.01 |
| 100meter freestyle | 30 | 40 | ±4.9 | 1.8 | 33 | 47 | | |

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