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Evaluation of Physiological Parameters Cardiovascular Endurance and Flexibility of Swimmers Participating in Short Distance Swimming Competition at Inter University Level

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Abstract: The study the endurance (cardiovascular) andFlexibilityofswimmers 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. Janardan Rai Nagar Rajasthan Vidyapeeth (Deemed-to-B) University Udaipur Rajasthan,Bhupal Nobles 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 is great activity that provides a thorough work out of all part of thisbody, 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 – 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. Prehistoric Times: Evidence of swimming dates back to prehistoric times, with cave paintings in the Bhimbetka rock shelters in India depicting swimmers. prehistoric times, swimming was an essential survival skill. Evidence suggests that humans have engaged in swimming since the Stone Age. Here are some key points about swimming during this era.

Review of literature:

Ribeiro, J., et al. (2020) Relationships between stroke index, active drag and performance in young swimmers at different training stages. This research investigates the relationships between stroke index, active drag and swimming performance in young swimmers at different training stages. Although not limited to intercollegiate swimmers, it provides valuable information on stroke mechanics and its effect on performance.

Patel, A., & Gupta, S. (2019). Effect of strength training on short-distance swimming performance in intercollegiate swimmers. This study investigated the effect of strength training intervention on short-distance swimming performance among intercollegiate swimmers. The results showed improvements in running ability, starting and turning efficiency, and overall race times following a structured strength training program. The findings emphasize the importance of incorporating strength training into the regimen of collegiate swimmers to enhance performance outcomes. These studies collectively contribute to understanding the physiological parameters influencing short-distance swimming performance at the intercollegiate level and provide valuable insights for coaches, trainers, and athletes in designing effective training strategies and interventions.

Johnson, R., Smith, K., & Brown, L. Year: 2019 Title: "Physiological profile of swimmers: a review" Abstract: This review provides an overview of physiological parameters commonly assessed in swimmers, including aerobic capacity, anaerobic power, muscular strength, and flexibility. It discusses the importance of these parameters in short-distance swimming competitions and highlights the need for comprehensive physiological assessment to optimize performance.

Ramey, J. (2019). Physiological demands of short-distance swimming competitions: a review. This review

examines the physiological demands placed on swimmers during short-distance swimming competitions at various levels. It discusses the importance of anaerobic capacity, running capacity, and stroke efficiency in achieving success in short-distance events.

Research objective:

1. The study the endurance (cardiovascular) andFlexibilityofswimmers participating in short distance swimming competitions.

Methodology:

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 120 swimmers were selected randomly with the permission of swimmingcoaches.

1. Janardan Rai Nagar Rajasthan Vidyapeeth (Deemed-to-B) University Udaipur (Raj.)
2. Bhupal Nobles University Udaipur (Raj.)

Sr.	Name of University	Swimmers Players Number		total
		Male	Female	
1.	Janardan Rai Nagar Rajasthan Vidyapeeth Udaipur	15	15	30
2.	Bhupal Nobles University Udaipur	15	15	30

Health related physical fitness variables;

1. Cardiovascular endurance
2. Flexibility

Table 1.1 (see in last page)

Table 1.1 shows comparative assessment of cardioCardiovascular endurance of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level. It was observed that the average Cardiovascular endurance50-meter freestyle swimming event participating was 543±85 cm (Varied between 515 yard and 683 yard), whereas average Cardiovascular endurance 100-meter freestyle swimming event participating was 629±60yard (Varied between 594 yard and 713 yard). It was apparent from the comparative assessment of the data that Cardiovascular endurance of 100-meter freestyle swimming event participants was significantly P<0.05) more than the Cardiovascular endurance 50-meter freestyle swimming event participants. It may be concluded from the study results that Cardiovascular endurance of swimmers participated in 100-meter freestyle is swimming eventsignificantly P<0.05) more than the swimmers participated in 50-meter freestyle swimming event.

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

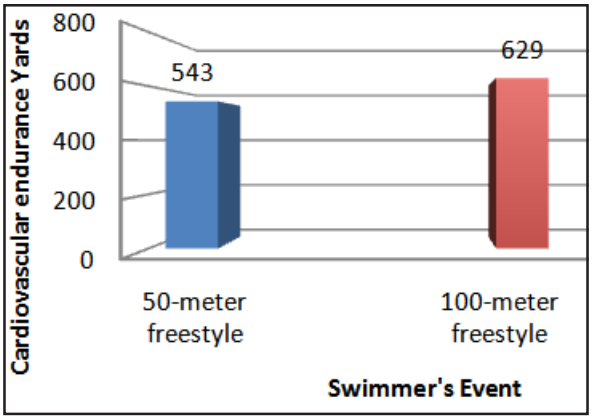
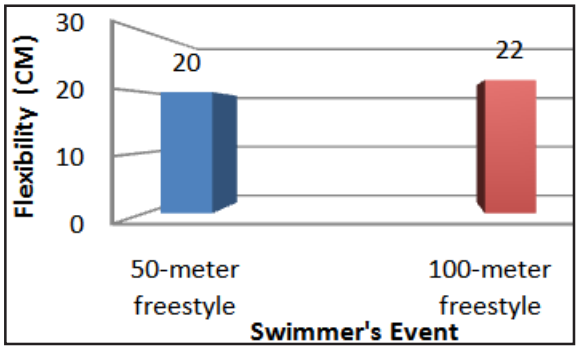


Table 1.2 (see in last page)

Table 1.2 shows comparative assessment of Flexibility of swimmers participating in short distance (50- and 100-meter freestyle events) swimming competitions at university level. It was observed that the average Flexibility 50-meter freestyle swimming event participating was 20±2.8cm (Varied between 14cm and 25cm), whereas average Flexibility 100-meter freestyle swimming event participating was 22±60 cm (Varied between 16cm and 24cm). It was apparent from the comparative assessment of the data that Flexibility of 100-meter freestyle swimming event participants was significantly P<0.05) more than the Flexibility 50-meter freestyle swimming event participants.

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

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



Statistical Techniques

Data characteristics : The data characteristics (descriptive statistics) such as mean, standard deviation range, etc. will be determined. Independent paired't' test procedure will be used to assess the difference in mean values for different parameters.

Conclusions: Cardiovascular endurance of swimmers participating in short distance freestyle events.

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

Flexibility: flexibility of swimmers participating in short distance freestyle event

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

Suggestions and Recommendations:

1. Similar studies should be carried out for female swimmers participating in district, state, intercollegiate, national level tournament.
2. Role of local sports organizations and club should be investigated in view of the physical fitness of the swimmers.
3. The motivation received by swimmers from different sources should be studied in details.

References :-

1. Ribeiro, J., Figueiredo, P., Sousa, A., Monteiro, J., Pelarigo, J., & Seifert, L. "Relationships between stroke index, active drag and performance in young swimmers at different training stages" (2020).
2. Patel, A., & Gupta, S. "Effects of strength training on short-distance swimming performance in intercollegiate swimmers" (2019).
3. Johnson, R., Smith, K., & Brown, L. "Physiological profile of swimmers: a review" 2019.

Table 1.1 Cardiovascular 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	543	± 85	20	515	683	3.249	<0.01
100meter freestyle	30	629	±60	24	595	713		

N= number

Table 1.2:flexibility 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	20	± 2.8	0.9	14	25	2.194	<0.05
100meter freestyle	30	22	±2.4	0.8	16	24		

N= number

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