

EFFECTIVENESS OF TELEREHABILITATION BASED CORE TRAINING IN IMPROVING THE ENDURANCE OF A TRACK AND FIELD VARSITY TEAM

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ABSTRACT

Telerehabilitation, a new platform for delivering online-based interventions and healthcare services has become beneficial to use for those who have economic hardship, insufficient local resources, and lives in remote areas where healthcare services are inadequate. On the other hand, Core Training has become part of the athletic training and is used by coaches and trainers in strengthening the core muscles of athletes. This paper reviews the effectiveness of using telerehabilitation-based core training exercises in improving the endurance for optimal athletic performance and injury prevention of the track and field athletes. In this study, twenty-four (24) track and field athletes, ages 15-18 years participated in 12 core training exercise sessions led by a licensed physical therapist using an online conferencing application that lasted 40 minutes to 1 hour, 3 times a week for a total of 4 weeks. This study utilized the quasi-experimental type of research in which single group Pre-test and Post-test scores were measured using the 20m Multistage Fitness Test to compare the results in investigating the improvement in the endurance of the respondents. The statistical data showed that there is a significant difference between the pre-test and post-test scores of the respondents with a mean of 31.55 ml/kg/min. on the pre-test scores, where most of the respondents were rated into the category of “Poor” and 40.37 ml/kg/min. on the post-test scores, where the majority of the respondents improved their ratings and progressed into the category of “Good”. The results of the post-test scores were significantly higher than pre-test scores which indicates that there is a significant improvement in the endurance of the respondents. Based on the data gathered, it can be concluded that 4 weeks of telerehabilitation-based core training exercise is an effective way of improving the endurance of the athletes.

Keywords: Telerehabilitation, Core Training, 20m Multistage Fitness Test, Endurance.

INTRODUCTION

The Covid-19 pandemic affected the whole world from livelihood, businesses and healthcare. In the Philippines, Telerehabilitation is a new practice and a substitute to face-to-face consultation, where all healthcare providers are adapting to continue giving healthcare services to patients. As a new method, the implementation of telerehabilitation was hindered by

numerous issues such as lack of studies regarding telerehabilitation resulting in difficulty establishing guidelines and laws supporting safety and efficiency of telerehabilitation for both patients and healthcare providers. Moreover, data from a study shows that despite being named as the world's social media hub, the Philippines continues to face problems emanating from the stakeholder (i.e., internal to the patient, profession, healthcare provider, or policymaker) or the environment (i.e., external) with the introduction of telerehabilitation. The lack of understanding, recognition and technological preparation among stakeholders, along with cynicism and resistance to change, are among the internal challenges (Leochico, 2020). Previous studies on telerehabilitation showed significant results in terms of evaluating the reliability of its use in healthcare or specifically to core training. However, there are key points provided that can still be considered challenging in terms of delivering treatment virtually. These include several concerns to the current evidence of the use of telerehabilitation, the consistency and clarity of providing appropriate descriptions of the interventions and measurement of outcome using telerehabilitation, and the challenge of previous studies showing the benefits of traditional face-to-face rehabilitation that still outweighs the virtual rehabilitation.

To address the gaps of knowledge whether telerehabilitation is an effective approach to improving the endurance of a varsity team. The purpose of this study is to evaluate the outcome of a telerehabilitation-based core training program: (1) 20m Multistage Fitness Test pre-test scores and (2) post-test scores. It was hypothesized that there is no significant difference between the pretest and post-test scores of the 20m Multistage Fitness Test after using the telerehabilitation based core training.

METHODOLOGY

Research Design

The study utilized a quasi-experimental type of research, specifically, a single group pretest and post-test research design was used in order to determine the effectiveness of telerehabilitation based core training in improving the endurance of a track and field team. The 20m Multistage Fitness Test was used in measuring the endurance of athletes before and after the training program. In order to acquire a baseline measure prior to implementation of the training program and after the implementation which led to the answering of the hypotheses of the study.

Sources of Data

The primary source of data were the results obtained from the 20m Multistage Fitness test, a standardized tool, and observation in order to determine the degree of change between the pretest and post-test data. The secondary source of data was the collected foreign and local studies, journal, articles, and literature cited through an online database.

Population of the Study

The population of the study consisted of 24 Track and Field Varsity Athletes ages 15-18 years old, in a school in Canlubang, Laguna. The use of video conferencing was used in order to implement the study. A non-probability sampling technique, specifically purposive sampling was used in determining the sample size. The target population was chosen through a purposive sampling using the inclusion criteria; Track and Field Varsity Athlete, 15-18 years old, and should have a telecommunication device.

Assessment

The respondents who passed the inclusion criteria were given a letter of consent and went through an online orientation to discuss the procedure of the study along with a licensed physical therapist to discuss the procedure of the exercise and the 20m multistage fitness test that will be done remotely.

All respondents completed a total of 12 exercise sessions over a 4-week period (3 sessions/week). The exercise program was the same for all the respondents including the warm-up and cool down exercises. The respondents were asked to perform the 20m multistage fitness test at the beginning (Pre-test) and end (Post-test) of the 4-week program.

Endurance of the respondents were assessed using the 20m multistage fitness test which is the standardized test with high reliability and validity with regards to cardiorespiratory fitness (Bagchi et al., 2019). In this test, the runs were coordinated using a pre-recorded sound that at set intervals produced a separate sound called "beep". The initial velocity begins at 8.5 km/hr and increases per minute after that by 0.5 km/hr. Until the next beep signals, the subject tries to conduct constant shuttle runs to hit the other end of the grid. The time between each beep decreased as the test continued. A warning of one failed attempt will be issued to the subject who does not hit the line before the beep sounds and must continue to sprint towards the line and keep up with the pace. If before the succeeding beep, the individual crossed the line, their unsuccessful attempt was reset. However, the subject would be asked to withdraw from the exam after making two successive unsuccessful attempts. The last level covered was reported after the withdrawal from the test. Using the Spearman Rank correlation a positive correlation between physical activity and 20m shuttle run test performance existed, $r = 0.254$. Output was positively correlated with physical activity levels in the 20 m shuttle run test (Pituk and Cagas, 2019).

RESULTS AND DISCUSSION

Table 1. Pre-test Scores of the Respondents.

Rating	No. of Respondents
Superior (M = >55.9 F = >41.9)	1
Excellent (M = 51.0-55.9 F = 39.0-41.9)	0
Good (M = 45.2-50.9 F = 35.0-38.9)	0
Fair (M = 38.4-45.1 F = 31.0-34.9)	4
Poor (M = 35.0-38.3 F = 25.0-30.9)	10
Very Poor (M = <35 F = <25)	9

Note: N = 24

Table 1 shows the results present that 41.67 percent of the population obtained a poor rating, 37.5 percent were under the very poor rating, 16.67 percent were under the fair rating, and 4.16 percent were under the superior rating. None of the participants obtained a rating of good or excellent.

Table 2. Post-test Scores of the Respondents.

Rating	No. of Respondents
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Superior (M = >55.9 F = >41.9)	1
Excellent (M = 51.0-55.9 F = 39.0-41.9)	2
Good (M = 45.2-50.9 F = 35.0-38.9)	11
Fair (M = 38.4-45.1 F = 31.0-34.9)	8
Poor (M = 35.0-38.3 F = 25.0-30.9)	2
Very Poor (M = <35 F = <25)	0

Table 2 provides the post-test multistage fitness test scores of the participants. The result shows that 45.83 percent of the participants obtained a good rating, 33.33 percent obtained a fair rating, 8.33 percent for both excellent and poor, and 4.17 percent obtained a superior rating. None of the participants obtained a very poor rating.

Table 3. Comparison of Pre-test and Post-test Scores of the Respondents.

Pre-test	Post-test	Mean Difference	t-value	
			Computed	Critical
31.55 ml/kg/min.	40.37 ml/kg/min.	8.82	9.91	2.01

Table 3 shows the comparison of the Pre-test and Post-test scores of the respondents' 20m Multistage Fitness Test with the mean of 31.55 ml/kg/min. on the pretest and 40.37 ml/kg/min. on the post-test. Computed t-value of 9.91 and Critical value of 2.01.

DISCUSSION

The objective of the present study was to determine the effectiveness of telerehabilitation based core training in improving the endurance of a track and field Varsity Team. The data gathered showed that prior to the telerehabilitation based core training, scores of most respondents are included in the "Poor" category for the 20m Multistage Fitness Test (Beep Test). After 12 training sessions, the data gathered showed that the post-test scores of most respondents is included in the "Good" category for the 20m Multistage Fitness Test (Beep Test).

A significant difference between the pre-test and post-test scores of the respondents was shown. A pre-test's mean score of 31.55 and a post-test mean score of 40.37 was gathered after the training sessions of the respondents. The two data has a mean difference of 8.88. The post-test scores of the respondents were remarkably higher than the pre-test scores thus the null hypothesis is rejected.

The use of telerehabilitation in providing patient care has constantly improved throughout the years. However, there is a lack of studies that state that telerehabilitation can be an alternative to traditional physical therapy in athletic training. This study expands the existing knowledge by assessing the effectiveness of telerehabilitation based core training in improving the endurance of a selected track and field varsity team.

CONCLUSIONS

Based on the findings and results, the study concluded that there was a significant difference between the pre-test and post-test measurement of the respondents after the telerehabilitation based core training exercise. The post- test scores of the respondents on the 20m Multistage Fitness Test (Beep Test) after the telerehabilitation were significantly higher than the pre-test scores which indicates that there was a significant improvement in the respondents' endurance.

The study also concluded that the use of telerehabilitation based core training was an effective way of improving the endurance of a Track and Field Varsity Team. The 20m Multistage Fitness Test (Beep Test) showed significant improvement in the post-test scores compared to the pre-test scores. Therefore, the study also recognized telerehabilitation as a feasible alternative to traditional physical therapy in terms of athletic training.

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