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The Effect Of A Healthy Fitness Program On Improving The Physical Fitness Level Of Students With Lower Levels Of Physical Fitness

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Abstract

Objective: This research aimed to design a specialized physical nutrition program for first-year students in the College of Physical Education who have low levels of physical fitness and to assess its impact on specific components of health-related physical fitness, namely flexibility, strength, muscular endurance, and respiratory endurance.

Materials and Methods: The study involved first-year students at the College of Physical Education and Sports Sciences, University of Dhi Qar, identified as having low physical fitness levels. It employed an experimental research approach using a single-group pre-test and post-test design, which was deemed appropriate for the study's objectives. The research was conducted from December 6, 2023, to April 8, 2024, utilizing the college's sports fields and physical fitness laboratory as the implementation sites. The main hypothesis proposed that there would be statistically significant differences at the 0.05 level between the average scores of the pre- and post-tests in favor of the post-test results.

Results: The findings of the study indicated statistically significant improvements in all tested components of health-related physical fitness. The post-test scores showed clear progress compared to the pre-test scores in flexibility, strength, muscular endurance, and respiratory endurance, thus confirming the effectiveness of the physical nutrition program.

Conclusion: It was concluded that the physical nutrition and health program effectively improved health-related fitness components among students with initially low physical fitness levels. Furthermore, the study demonstrated that increasing the amount of time spent on physical activity is positively associated with improved fitness. Therefore, the integration of such programs into undergraduate physical education curricula is essential, particularly for students who begin their studies with below-average levels of physical fitness.

Keywords: Healthy Fitness Program, Physical Fitness, Low Fitness Level, University students.

Introduction

Nutrition is one of the most important factors in improving physical efficiency, increasing recovery speed, and resisting fatigue. It represents an example of the connection between the external environment and the human body. Malnutrition significantly affects blood sugar and blood pressure levels during exercise, which can cause a range of negative effects. Skipping breakfast or delaying it until late in the day results in low blood sugar and blood pressure levels throughout the day, leading to dizziness, weakness, lack of

concentration, and feelings of fatigue and lethargy. These conditions can also affect levels of essential nutrients in the body, such as certain vitamins and minerals.

Adolescence is a critical stage when physical activity tends to decrease due to lifestyle changes. This decrease in physical activity has contributed to excessive weight gain or underweight, as well as an increase in cases of arterial disease, obesity, and related illnesses such as diabetes, high blood pressure, heart attacks, and anxiety. There is a clear link between low levels of physical activity and the rise of many modern diseases. As a result, there has been growing interest in preventing these diseases through early physical activity, particularly in educational institutions such as schools and universities. Colleges of physical education, where physical development is a key part of the curriculum, play a significant role in raising physical fitness levels among students. Physical fitness is an important part of overall well-being, encompassing health, psychological, physical, and social fitness.

While traditional sports have long been the focus of physical education programs, the modern era's demands, with its vast electronic capabilities, have shifted priorities. Today, physical fitness and health have become essential components of physical education, especially during the period in which individuals engage in sports. In fact, sports are now regarded as a national security concern, and the inclusion of physical fitness and health curricula in schools, institutes, and universities is seen as a step toward achieving sustainable development and preserving human energy.

Research Problem: The research problem arises from the following observation: students in secondary schools often spend long periods studying, leading to a lack of physical activity. This inactivity has caused many students to experience slight weight gain or thinness. Upon enrolling in various colleges and undergoing physical fitness tests, it becomes clear that these students have low levels of physical fitness. The researcher, through their role as a member of the medical examination committees for students applying to the College of Physical Education and as a professor of health courses, noticed that many students admitted to the College of Physical Education had low physical fitness scores, often ranking in the lowest quartile of college admissions. This observation led the researcher to explore the impact of a physical nutrition program on improving physical fitness and health among these students, aiming to identify potential solutions and enhance their physical fitness levels to match their peers.

Research Objectives:

1. To design a specialized physical nutrition program for first-year students at the College of Physical Education with low physical fitness levels.

2. To assess the effect of the physical nutrition program on key components of health-related fitness among students with low physical fitness levels at the College of Physical Education, University of Dhi Qar.

Research Hypotheses: The research hypothesizes that there will be statistically significant differences at the significance level of (0.05) between the mean scores of the pre- and post-tests of the research sample in some components of physical fitness (flexibility, strength, muscular endurance, and respiratory endurance), with improvements favoring the post-test results.

Research Areas:

1. **Human Sphere:** First-year students at the College of Physical Education and Sports Sciences, University of Dhi Qar, with low physical fitness levels.
2. **Temporal Domain:** From December 6, 2023, to April 8, 2024.
3. **Spatial Domain:** The playgrounds and the physical fitness laboratory of the College of Physical Education and Sports Sciences, University of Dhi Qar.

Materials and Methods

Study Participant

The researcher used the experimental method with a single-group experimental design, which was deemed most suitable for the nature of the study. The study population consisted of first-year students at the College of Physical Education and Sports Sciences, Dhi Qar University, during the 2023-2024 academic year. The research sample was intentionally selected from 35 first-year students with low physical fitness levels. These students were chosen based on their physical fitness scores, which fell within the last quarter of the admission grades for the College of Physical Education and Sports Sciences at Dhi Qar University. The participants were specifically selected because of their low physical fitness levels, as indicated by their initial fitness scores, and their willingness to participate in the study. The aim was to assess the impact of a physical nutrition program designed to improve their physical fitness and health.

Study Organization

The research employed a variety of tools for data collection, including a restometer for measuring height, a medical scale for weight, a measuring tape, a stopwatch, and a flexibility measuring device such as the Swedish bench and ruler. To assess the physical fitness of the participants, the study included tests of muscle flexibility, muscle strength, muscular endurance, and cardiorespiratory fitness. Flexibility was measured using the arm

extension test, where the distance reached by the fingertips was recorded in centimeters. Muscle strength was assessed through a dynamometer test, which measured the strength of the trunk muscles (extensor muscles). The muscular endurance test recorded the number of knee raises performed within a minute. Cardiorespiratory fitness was evaluated through a 12-minute run or walk, with the distance covered used to determine the subject's fitness level, based on reference tables adjusted for age and gender.

The physical nutrition program was carefully designed to include standardized ratios of essential nutrients—carbohydrates, fats, and proteins—tailored to the needs of the participants. The goal of this program was to restore their nutritional intake to normal levels, taking into account their specific physical conditions. The physical program was focused on improving key physical fitness components such as flexibility, muscle strength, and aerobic endurance. This program was conducted over 12 weeks, with three training sessions each week, each lasting 60 minutes. The structure of each session included a warm-up period, a main workout period, and a cool-down period. The warm-up prepared the body for exercise, the main workout focused on achieving the targeted physical improvements at a moderate intensity (60% to 70% of maximum heart rate), and the cool-down period helped the body recover and relax the muscles.

Statistical Analysis

Before beginning the main experiment, a pilot study was conducted to test the tools and devices used in the research. This preliminary study helped identify any challenges and allowed for necessary adjustments to ensure the validity and reliability of the tools. The results confirmed that the tools and devices used in the research were of high quality and suitable for the study. After the pilot study, the main experiment was conducted, beginning with pre-test measurements and assessments on June 4, 2023. The study continued for 12 weeks, with three training sessions per week. Following the physical nutrition and exercise program, post-tests were conducted to assess the effectiveness of the intervention. The pre-test and post-test data were then analyzed using appropriate statistical methods to evaluate the research hypotheses, focusing on potential significant improvements in the physical fitness components of the participants.

Results

This chapter presents the analytical results of the research, which were obtained through an experimental approach. The results are summarized in Table (2), which provides

the arithmetic means, standard deviations, t-values, and significance levels for the pre- and post-test scores of the research variables.

Table (2) shows the test results for the arithmetic means, pre- and post-test standard deviations, t-values, and significance levels for the research variables:

Variables	Unit of Measurement	Sample Number	Pre-Test Arithmetic Mean	Pre-Test Standard Deviation	Post-Test Arithmetic Mean	Post-Test Standard Deviation	T-Value	Sig
1. Flexibility	cm	35	5.30	0.33	7.45	0.92	14.15	0.00
2. Muscular Strength	kg	35	13.07	0.763	14.87	0.445	26.45	0.00
3. Muscular Endurance	repeat	35	18.07	2.23	20.44	0.37	6.44	0.00
4. Cardiorespiratory Fitness	milliliter	35	19.09	0.920	22.46	0.545	22.65	0.00

From the data presented in Table 2, it is clear that there were statistically significant differences between the pre-test and post-test results for all variables under investigation. The t-values and corresponding p-values (sig) show significant improvements in all components, with p-values less than 0.05, indicating the effectiveness of the dietary and physical program.

Discussion

The significant differences observed between the pre-test and post-test results can be attributed to the impact of the physical and nutritional program used in the study. The program combined aerobic exercises and a tailored nutritional approach to rehabilitate students with low physical fitness levels. This approach aligns with the findings of Hazza bin Muhammad Al-Hazza (2009), who emphasized that regular physical training, particularly aerobic exercises, plays a crucial role in improving body composition and fat burning.

The results also confirm the effectiveness of the nutritional component of the program, which included healthier fats such as olive oil and flaxseed oil, reduced starches and sugars, and increased protein intake. These changes are consistent with findings from various studies that suggest dietary modifications can contribute significantly to improving overall fitness. The positive impact of these dietary changes is supported by Bahaa Al-Din Ibrahim Salama (1990), who found that fat decomposition improves with continued physical training, enhancing muscular endurance and overall physical fitness.

Additionally, the improvement in flexibility, muscular strength, and muscular endurance observed in this study is in line with the research of Abu Al-Ela Ahmed Abdel Fattah (1997), who highlighted the importance of regular physical activity in increasing joint

flexibility and muscle strength. Flexibility, as observed in this study, is essential for maintaining joint health, improving exercise performance, and enhancing muscle strength.

The improvement in muscular strength, an important aspect of physical fitness, is also supported by Al-Hazza Muhammad Al-Hazza (1997), who noted that muscle strength is crucial for daily activities such as walking, sitting, and lifting objects. Strength plays a key role in overall physical fitness, contributing to a balanced and healthy physique.

Furthermore, the findings of this study resonate with the work of Hussein Dari et al. (2020), who demonstrated that physical-nutritional programs significantly improve physical efficiency and health behavior in students. By promoting healthy behavior and encouraging regular physical activity, such programs not only enhance body composition but also foster greater motivation among students to engage in exercise, leading to improved physical and health outcomes.

In conclusion, the results of this study provide strong evidence of the positive impact of a structured physical and nutritional program on improving the physical fitness of students with low fitness levels. The significant improvements in flexibility, muscular strength, muscular endurance, and cardiorespiratory fitness highlight the importance of combining targeted physical activity with a tailored nutritional approach to improve overall health and performance. These findings support the efficacy of such programs in enhancing physical fitness and suggest their potential for wider application in similar populations.

Conclusion

The findings of this study highlight the significant role of a physical-health program in improving various components of health fitness and other health-related fitness elements. The results demonstrate that increasing the amount of time spent on regular exercise is directly linked to improvements in overall health fitness. This underscores the importance of consistent physical activity in enhancing health outcomes, particularly for individuals with low physical fitness levels. At the undergraduate level, implementing a physical-health program is crucial, especially for students with low fitness levels. Such a program complements the existing curricula in colleges of physical education, offering students the opportunity to improve their physical health alongside their academic pursuits. This approach not only benefits students during their studies but also equips them with the knowledge and habits necessary for maintaining good health throughout their lives.

Based on these findings, several recommendations can be made. First, it is essential to implement a physical-health program at the undergraduate level, particularly targeting

students with low physical fitness levels. This will help improve their overall health and fitness, enabling them to better perform academically and physically. Additionally, educational seminars should be conducted to raise awareness of the importance of regular exercise, both on and off campus, for individuals across various age groups. By promoting the value of physical activity, these seminars can encourage a culture of fitness and well-being within the university community. Lastly, it is important to provide the necessary tools and resources to facilitate the successful implementation of a physical-health program. This includes ensuring that students have access to appropriate equipment and facilities, both on and off campus, to support their participation in physical activity and health promotion programs.

10

Conflict of interest

Have no conflict of interest

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