INFLUENCE OF NUTRITION AND PHYSICAL ACTIVITY ON HEALTHY WEIGHT MANAGEMENT OF PHYSICAL FITNESS PARTICIPANTS

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A RESEARCH SUBMITTED TO THE DEPARTMENT OF HUMAN, KINETICS AND SPORT SCIENCE DEVELOPMENT, FACULTY OF EDUCATION, UNIVERSITY OF BENIN IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF B.Sc. (Ed.) DEGREE IN HUMAN, KINETICS AND SPORT SCIENCE DEVELOPMENT

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CERTIFICATION

This is to certify that this project work was carried out by **DICK GOODNESS OSOMEOGHENA** with the Matriculation number **EDU2102445** and was approved adequate in scope and content for the partial fulfilment of the requirements for the award of Bachelor of **Science B.Sc. (Ed.)** degree in Human, Kinetics and Sport Science Development.

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DEDICATION

This research is devoted to God Almighty, whose unwavering mercy, grace, favour, love, wisdom, and support sustained and guided me through every challenge and success encountered in the course of this work.

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ABSTRACT

This study aims to understand how nutrition and exercise affect healthy weight management in people involved in physical fitness. The purpose was to understand the connexion between routine exercise, a healthy diet and change in weight, to share reliable information about their relationship and to promote healthy habits of nutrition and physical fitness. The study looked at 100 people who are regularly involved in fitness routines by using questionnaires to cheque their food habits, the amount they exercise and the times they eat. Various descriptive statistics such as means and standard deviations, were looked at to analyse the research questions. Chi-square tests were performed to cheque whether there was a link between nutrition, physical activity and healthy weight outcomes. Evidence showed that balanced eating habits, regular exercise and proper weight management go hand in hand. A majority of participants felt that eating meals at regular intervals and the right amount of meals help keep weight and health in cheque. They emphasise that combining physical activity and a better diet is key to managing weight. Being guided in nutrition, physically active and planning meals well up front were found to achieve and sustain a healthy body weight best. It stresses the need for such programmes to stress the importance of nutrition and exercise in achieving better control of weight and general health.

CHAPTER ONE

INTRODUCTION

Background to the Study

Nutrition and physical activity play a vital role in maintaining a healthy weight for individuals. The food we consume not only affects our physical appearance but also has a significant impact on our mental well-being. Food serves as a source of energy for the body and provides the necessary nutrients for growth and development. Additionally, the quality of our diet influences brain function, muscle growth, immunity, and overall bodily function. Healthy nutrition also helps protect us from various illnesses and diseases, which is why it is essential to maintain a balanced diet (Willett et al., 2024). Proper nutrition improves the health of infants, children, and mothers. It strengthens immune systems, promotes safer pregnancies and childbirth, and lowers the risk of non-communicable diseases like diabetes, ultimately contributing to a longer life (Magne et al., 2017).

Physical activity plays a crucial role in our daily lives. It can boost energy levels and support immune function. Regular exercise strengthens bones and muscles, which is especially important as we age. Additionally, engaging in physical activities improves our mood by releasing endorphins, often called "feel-good" hormones. These endorphins can help alleviate stress, anxiety, and depression (Cullen 2023). Exercise also enhances sleep quality, increases productivity, and aids in healthy weight management.

Participating in regular physical activities enhances not only physical health but also cognitive, social, and emotional development. Maintaining a healthy weight is essential for both athletes and non-athletes. Keeping your body in shape allows it to perform effectively and efficiently. Maintaining a healthy weight improves overall fitness and boosts energy levels, making daily activities easier to manage. It also supports the joints, which helps prevent injuries. Additionally, healthy weight management can enhance mood and boost confidence. Effective weight management is crucial for athletes as it significantly impacts their performance in sports. Maintaining an ideal weight enables athletes to optimize their speed, strength, agility, and other essential skills to excel in their sport (Kraemer et al., 2024).

Maintaining a healthy weight is crucial for athletes, as it can significantly improve their recovery time. Athletes who have a healthy weight tend to recover more quickly from fatigue and injuries, allowing them to return to training sooner. Excess weight, on the other hand, puts additional stress on joints and bones, increasing the risk of injuries. In contrast, a healthy weight reduces strain on these areas, making athletes less susceptible to injuries (Alcock et al., 2022).

Developing a weight management plan is essential for everyone. Proper nutrition is crucial for peak performance, especially for those who exercise to stay fit, participate in organized sports, or train to reach the highest level in their sport. For athletes, weight management is a vital component; consuming the right foods can significantly impact their success or failure. When athletes combine severe energy restriction with an intense

resistance and strength training program, it can lead to metabolic changes (Odysseos & Avraamidou, 2017).

Combining healthy nutrition and physical activity allows individuals to maintain a healthy weight, which can enhance their overall health and lead to a higher quality of life. Incorporating healthy dietary habits into your lifestyle early on provides long-term health benefits. Additionally, regular physical activity contributes to improved overall health and well-being. Participating in physical activities like cardio and strength training is essential for maintaining a healthy weight and enhancing overall fitness. When people exercise, their bodies burn calories, which helps balance out the calories consumed. Furthermore, exercise boosts metabolism, the rate at which the body burns calories even while at rest, thus supporting long-term weight management (Petridou et al., 2021).

Exercise enhances overall fitness by boosting muscle strength, endurance, and flexibility. Strength training, like weightlifting, builds and tones muscles, improving physical appearance and increasing metabolism, as muscles burn more calories than fat. Cardiovascular exercises, such as running and cycling, strengthen the heart and lungs, leading to better endurance and stamina. Regular exercise offers many health benefits beyond just weight management. It helps lower the risk of chronic diseases, such as heart disease, diabetes, and some types of cancer. Additionally, exercise provides mental health benefits by improving mood and well-being through the release of hormones that make you feel good, while also reducing stress, anxiety, and symptoms of depression (Mahindru et al., 2023).

In summary, regular exercise can help you become a healthier and fitter version of yourself. By incorporating different types of physical activity into your routine, you can achieve and maintain a healthy weight, improve your fitness levels, and enjoy numerous health benefits.

The aim of this study is to investigate how the combination of nutrition and physical activity influences the ability of individuals in physical fitness programs to manage their weight effectively and healthily. This research seeks to understand the synergistic effects of nutrition and exercise on weight management within the context of physical fitness programs.

Statement of the Problem

Many people may not realize that nutrition and physical activity are essential for maintaining a healthy weight and overall well-being. These factors significantly affect various aspects of our lives. Unfortunately, only a small percentage of individuals integrate proper nutrition and regular exercise into their daily routines, even though they understand their importance. It’s clear that not everyone recognizes the necessity of physical fitness and healthy eating habits in their everyday lives.

This study aims to investigate how combining nutrition and exercise affects individuals' ability to manage their weight healthily while participating in physical fitness programs. The research seeks to understand the relationship between dietary choices, levels of physical activity, and weight management outcomes among those engaged in fitness activities.

Research Questions

The following research questions were raised to guide the study:

1. How does nutrition influence healthy weight management in physical fitness participants?
2. How does physical activities influence healthy weight management in physical fitness participants?
3. To what extent do nutrition and physical fitness affect healthy weight management?
4. How does the frequency and timing of meals among physical fitness participants influence their ability to maintain a healthy weight?

Hypothesis

The following hypothesis what formulated to guide the study at 0.05 level of significance:

Hypothesis 1

- Null Hypothesis (H_{01}): There is no significant difference in healthy weight outcomes between participants who integrate healthy eating habits into their daily routine and those who do not.
- Alternative Hypothesis (H_{11}): Participants who integrate healthy eating habits into their daily routine are more likely to achieve a healthy weight compared to those who do not.

Hypothesis 2

- Null Hypothesis (H_{02}): There is no significant relationship between engaging in physical activities and achieving a healthy weight among participants.
- Alternative Hypothesis (H_{12}): Participants who engage in physical activities are likely to have a healthier weight than those who do not.

Hypothesis 3

- Null Hypothesis (H_{03}): The combination of balanced nutrition and regular physical activity does not have a significant impact on managing a healthy weight for individuals in fitness programs.
- Alternative Hypothesis (H_{13}): The combination of balanced nutrition and regular physical activity has a positive impact on managing a healthy weight for individuals in fitness programs.

Hypothesis 4

- Null Hypothesis (H_{04}): The frequency and timing of meals among physical fitness participants have no significant influence on their ability to maintain a healthy weight.
- Alternative Hypothesis (H_{14}): The frequency and timing of meals among physical fitness participants significantly influence their ability to maintain a healthy weight.

Purpose of Study

1. To assess the effects of consistent exercise and a healthy diet on the weight of the participants.
2. To provide accurate information on the impact of physical activity and healthy nutrition on individuals' weight management.
3. To offer valuable guidance on promoting physical activity and healthy eating among fitness participants.

Significance of the Study

This research is important for understanding how nutrition and physical activity impact individuals in physical fitness programs. It helps them effectively and healthily manage their weight. Understanding this influence can assist in developing more personalized and efficient strategies for weight management in fitness settings, ultimately improving health outcomes for participants.

Understanding how nutrition and physical activity impact healthy weight management in physical fitness participants is essential. This understanding can aid in the development of more effective strategies tailored to individuals' needs, resulting in better health outcomes and overall well-being. This study is important because it can enhance weight management practices in physical fitness programs, ultimately benefiting the overall health and wellness of participants.

Scope and Delimitation of the Study

This study is concerned with assessing how nutrition and physical activity influence healthy weight management among physical fitness participants in selected prominent fitness centres and groups in Benin City. It focuses specifically on adults who have engaged in physical fitness programs consistently for at least three months. The study evaluates the participants' dietary habits, exercise routines, and their combined effects on weight control.

Limitation of the Study

One potential limitation is the challenge of generalizing findings from the study sample to broader populations.

Individual bias may exist in self-reported data concerning dietary patterns and exercise routines. Challenges in accurately measuring commitment to nutrition and exercise plans.

Definition of Terms

Influence: the capacity to have an effect on the character, development, or behaviour of someone or something, or the effect itself.

Nutrition: This is the process of providing the food necessary for health and growth.

Physical activity: This means participating in physical activities that require the use of energy.

Weight management: This entails participating in physical activities and exercises tailored to assist individuals in effectively managing their weight.

Physical fitness participants: These are individuals who participate in physical fitness programs and activities to enhance their overall health and well-being through exercises, sports, and movement-based routines.

Dietary patterns: This refers to the overall combination of foods and beverages consumed

consistently over time.

Exercise routines: These are organized plans that involve a variety of activities designed to enhance overall health and well-being through exercise, sports, and other movement-based routines.

Weight management strategies: This involves a variety of approaches and techniques aimed at helping individuals achieve and maintain a healthy weight. Physical fitness programs: These are structured plans that comprise of series of activities designed to promote overall health and well-being through exercise, sports, and other movement-based routines.

Metabolic rate: This refers to the number of calories your body requires to perform essential functions, such as breathing, blood circulation, and cell repair.

Strength training: This involves engaging in physical activities and exercises designed to help manage weight effectively.

CHAPTER TWO

REVIEW OF LITERATURE

This literature review section will be organized under the following sub-headings:

- Concept of Nutrition
- Concept of Physical Fitness
- Concept of Nutrition and Healthy Eating
- Concept of Physical Activity and Exercise
- Understanding Healthy Weight and Weight Management
- Influence of Nutrition on Weight Management and Physical Activity
- Role of Macronutrients and Micronutrients in Weight Control
- Strategies for Promoting Healthy Living
- Theoretical Literature
- Empirical Literature
- Summary of Reviewed Literature

Concept of Nutrition

The fundamental aspect of human health depends on nutrition which leads organisms through the entire process of ingesting and absorbing food material followed by transportation then utilization and food substance excretion (Saha et al., 2021). Research in nutrition teaches the effects that food has on human body growth and development along with health maintenance (Sarwar et al., 2025). Analysts have presented different

interpretations of nutrition which describe its complex qualities. Nutrition stands as “the science of the nutrients and other substances in food and their actions and interactions that determine their balance with respect to health situations” according to Gropper and Smith (2021). The science which investigates organism-to-food interactions for wellness advancement and sickness prevention is described in Whitney and Rolfes (2022). Mahan et al. (2020) present the clinical perspective of nutrition as the practice which uses food and nutrient guidelines to preserve health and stop illnesses and regulate current medical conditions. General agreement exists that nutrition represents more than food consumption because it refers to the intricate biological process that keeps living systems functioning.

Studies in recent times have extended the knowledge base about how nutrition affects health. Research evidence shows that proper nutrition minimizes the risk for heart disease together with diabetes and cancer (Afshin et al., 2019; Willett et al., 2019). The Global Burden of Disease Study (GBD 2019 Risk Factors Collaborators, 2020) illustrates that inadequate nutrition has emerged as the principal reason for worldwide fatalities thus mandating immediate attention on food education. Scientists make a major discovery related to personalized nutrition which creates customized interventions from genetic to microbiome to lifestyle data to gain improved health results beyond broad recommendations (Zeevi et al., 2015; Ordovas et al., 2022). People no longer accept generic nutritional approaches since wellness follows individualized plans based on personal needs.

Health relies on three fundamental categories of nutrition which have specific health benefits. Macronutrition refers to obtaining energy from proteins and carbohydrates and fats which are the essential food components used for day-to-day activities according to Gropper & Smith (2021). The necessary diet elements of micronutrition consist of essential vitamins and minerals needed in small quantities to maintain bodily processes like bone health vitamin D and oxygen transport with iron (Whitney & Rolfes, 2022). Clinical Nutrition evaluates the role food plays to identify illnesses and determines specific dietary and medical food treatments for disease prevention and management (Mahan et al., 2020). Sports Nutrition focuses on diet modification for sport performance enhancement and speed of recovery and extended endurance periods (Thomas, Erdman, & Burke, 2016). Public Health Nutrition provides population-level nutritional services through food security programs and educational advocacy to combat obesity along with nutritional problems (Delisle, 2020). Community Nutrition adopts public health principles at the ground level where it directly works with communities to develop nutritional interventions for behaviour change (Boyle, 2021). Disease prevention across multiple environments relies on these distinct categories which fulfill unique purposes in achieving their health promotion goals.

Nutrition continues as a dynamic scientific field that closely connects to human wellbeing and life expectancy as well as overall quality of daily existence. Scientific research about nutrition ranges from studying individual cells up to developing public policy through which recent discoveries have enabled tailored approaches to global health solutions.

Knowledge and implementations of nutritional principles have become increasingly vital because both undernutrition and obesity issues currently affect our world.

Concept of Physical Fitness

Physical fitness stands as the base support for human health while also measuring a person's capability to carry out energetic activities with full mental awareness and sustained energy levels across daily obligations and relaxation periods along with unforeseen situations (Kohl III et al., 2025). The condition arises from living actively through physical activity and extends beyond mere absence of sickness or disability because it remains dynamic (Navarrete-Villanueva et al., 2021). The essential definition of physical fitness emerged from Caspersen et al. (1985) who noted that “a set of attributes that people have or achieve that relates to the ability to perform physical activity” distinguishes fitness from isolated performances. Physical fitness encompasses health-related and skill-related aspects which together comprise endurance and strength attributes with flexibility and body composition management and neuromuscular skill capability according to the American College of Sports Medicine (2022). Howley and Thompson (2022) support the notion that fitness represents “the ability to perform moderate to vigorous levels of physical activity without undue fatigue and with rapid recovery” for better life quality. Improved physical fitness reduces the risk of cardiovascular diseases, type 2 diabetes, cancer, mental health disorders, and facilitates survival and active life according to Warburton and Bredin (2017).

Multiple current studies maintain physical fitness research at all developmental stages. The study conducted by Saint-Maurice et al. (2019) demonstrated that raising step count during one day by any amount resulted in noticeable reductions of mortality rates which proves regular movement has strong positive effects. The authors of Laddu et al. (2021) explained that physical fitness functions like "immunity medicine" since physically active populations demonstrate better resistance to future epidemics. Hillman together with Erickson and Kramer (2020) established a cognitive link by demonstrating that increased aerobic fitness enhances brain composition and executive abilities and spatial memory which explains why exercise is vital for academic achievement and professional success. The research team of Booth, Robert and Laye (2017) demonstrated that the health risks from inactivity match smoking risks because physical inactivity stands as the leading factor for worldwide chronic diseases. The research has demonstrated that staying physically active is essential for producing positive outcomes within every aspect of physical activity and learning as well as emotional health and social relationships.

Physical fitness comprises two main components which include health-related elements and skill-related elements that form essential aspects for success and wellness.

Health-Related Components:

1. **Cardiorespiratory Endurance:** Cardiorespiratory Endurance stands as the capacity of blood circulation and respiratory systems to deliver oxygen during active exercise periods according to Bosak (2018). The functioning of your heart along with stamina depends on this particular element of health.

2. **Muscular Strength:** Muscular Strength stands as the maximum force which muscles alone or groups of muscles develop while pushing back against fixed pressure (Suchomel et al., 2016; Heyward & Gibson, 2018). People with higher strength levels develop better metabolic health outcomes simultaneously preventing injuries.
3. **Muscular Endurance:** A muscle or muscle group shows muscular endurance when it repeatedly contracts throughout extended periods although fatigue has not set in (Howley & Thompson 2022).
4. **Flexibility:** the motion flexibility of a joint depends on muscles and ligaments and tendons according to Warburton & Bredin (2017). Having enough flexibility decreases the risks for injuries and helps achieve better functional movements.
5. **Body Composition**: Body Composition represents the weighted relationship between fat mass along with the various lean mass elements comprising muscle tissue and bone structures and water content (Booth et al., 2017). The proportion of body components should remain healthy to support cardiovascular functions as well as metabolic processes.

Skill-Related Components:

1. **Agility**: The ability to move quickly and easily, changing body position efficiently (Sheppard & Young, 2006). Essential for sports and quick responses.

2. **Balance**: The ability to maintain the body's position, whether stationary or moving (ACSM, 2022). Important for injury prevention and daily functioning, especially in older adults.
3. **Coordination**: The harmonious functioning of body parts to produce smooth and efficient movement (Cormie et al., 2011).
4. **Power**: A combination of strength and speed, critical for explosive movements like jumping and sprinting (Cormie et al., 2011).
5. **Reaction Time**: The time taken to respond to a stimulus, important in both athletic performance and real-world safety (Heyward & Gibson, 2018).
6. **Speed**: The ability to move quickly from one point to another (Sheppard & Young, 2006).

Modern fitness thinking adopts new health-oriented concepts beyond established categories to classify broader movement-based approaches. The main objective of Functional Fitness is to improve everyday movement through actions that replicate real-life activities alongside stable and mobile development and combined strength (Jones et al., 2020). The concept known as Physical Literacy strengthens individuals to maintain physical activity through lifespan development by building their competence and confidence with proper motivation (Edwards et al., 2017). Numerous people especially children remain unable to establish fitness practices that continue into adulthood because they lack physical literacy. According to Lifestyle Fitness one should prioritize physical

movement through activities such as walking, biking, gardening and active commuting rather than depending solely on gym sessions (Piercy et al., 2018).

Physical fitness constitutes an essential basic element that combines healthy living with both cognitive vitality and emotional stability and social functioning in addition to being a goal exclusive to athletes. Physical fitness requires a complete method which emphasizes both peak achievements coupled with daily ability together with adaptability and care for wellness. The present technological era of automated distractions and reduced movement wants people to grasp and support physical fitness because it brings benefits to personal growth and society (Booth et al., 2017; Warburton & Bredin, 2017).

Factors Affecting Physical Fitness

1. Diet: The body needs proper nutrition to obtain all necessary nutrients for creating energy while building muscles and maintaining overall wellness. The body needs a balanced diet for it to achieve its peak physical abilities.
2. Environment: The physical fitness levels of an individual are influenced by environmental elements that include climate patterns together with pollution levels and altitude heights which affect breathing capacity and endurance and energy distribution.
3. Health Condition: Health Condition such as chronic illnesses together with injuries as well as genetic predispositions often reduce physical fitness ability to successfully execute exercises properly.

4. Adequate Rest and Relaxation: Regular rest and relaxation periods help the body heal itself and fix muscles as well as preserve physical activity energy levels.
5. Exercises: Systematic exercise encourages lasting achievement of fitness markers while improving joint flexibility and heart health and build strength for complete health benefits.
6. Personal Hygiene: Good hygiene practices through personal care help stop infections resulting in both deteriorated physical performance and poor general health.
7. Age: Regular exercise supports age-related fitness preservation because it helps slow the normal decrease of muscle mass and metabolic speed and rigidness with natural aging.
8. Physique: Body composition consisting of muscle mass together with fat percentage along with bone structure functions as a determinant factor for physical abilities.
9. Gender: Gender differences in hormones result in distinct patterns for muscle growth together with endurance abilities and fitness standard which causes male and female bodies to develop differently.

Physical Signs of Lack of Fitness

1. Fatigue: fatigue shows itself as a continuous state of tiredness and low energy which persists even after trivial motion demonstrates poor stamina as well as endurance.

2. Shortness of Breath After Minimal Physical Activity: becoming breathless after doing light physical exercise indicates both weak cardiovascular health and diminished lung capability.
3. Protruded Stomach: A protruded stomach indicates insufficient fitness together with unhealthy dietary choices and limited exercise activity.
4. Muscle Weakness: weakness in muscles prevents performing basic activities because of little physical movement combined with no strength training habits.
5. Bad Posture: slouching and poor body alignment occurs when the core muscles remain weak from sitting excessively.
6. Slowed Reactions and Reflexes: A person who experiences slower stimulus response times along with delayed reflexes typically demonstrates poor coordination between nerves and muscles in addition to being physically inactive.
7. Reduced Energy for Work and Social Activities: Work-related fatigue along with social exhaustion becomes a problem because poor stamina and short-lasting energy prevent participation in social gatherings.
8. Mood Swings and Feeling of Depression: When hormone endorphins decrease from inactivity people may develop mood swings along with depression.

Physical wellness builds better health combined with superior athletic capabilities. Physical fitness components can be developed using exercise consistency and physical activities together with proper nutrition.

Concept of Nutrition and Healthy Eating

Nutrition acts as the biological manner by which all living things acquire food substances to uphold life yet additionally enhance health along with facilitating growth and reproduction processes. Humans process food through biological functions which start with eating and continue with digestion before absorbing the nutrients during transport to later assimilate and then eliminate them from the body (Gropper & Smith, 2021). Healthy eating combines good nutrition to describe steady dietary habits of diverse meals containing nutritious elements that enable body systems to function optimally while reducing risk factors for chronic diseases (World Health Organization [WHO], 2021). The current views on nutrition show a shift towards both obtaining enough calories alongside supplying wholesome dietary resources (Mozaffarian et al., 2022). A healthy diet focuses on consuming lots of fruits and veggies with whole grains and lean protein and wholesome fats together with avoiding added sugars and processed foods and high sodium consumption as per the Centers for Disease Control and Prevention (CDC, 2023). New medical findings demonstrate that nutrition stands as a foundational component of preventive health because it shapes immune system response, mental wellbeing and heart-related activity and metabolism (Shlisky et al., 2017 & Willett et al., 2019). Scientific understanding of the medicinal properties of food has increased in importance because dietary decisions directly prevent and manage diseases (Aune et al., 2021). Modern nutritional science advocates for choosing food items with the highest levels of nutrients and health promoting substances that deliver fewest calories among them (NIH,

2022; Cannon & Leitzmann 202). Orji & Mandryk (2014) confirm that experts now promote healthy eating plans which adapt to individual needs that consider age group membership along with gender identity and life practices while respecting cultural background and health requirements. The U.S. Department of Agriculture (2020) and WHO (2021) provide dietary guidelines which support open eating patterns that require moderation along with eating a range of foods in proper proportions. Highest-level research has confirmed the Mediterranean diet together with DASH diet and plant-forward eating patterns to sustain healthy weights while protecting heart health and improving mental wellness (Mente et al., 2021; Martinez-Gonzalez & Martín-Calvo, 2022). Healthy eating connects to sustainability now because it supports nutritional patterns that help both people and the environment (Clark et al., 2020).

The process of adopting healthy eating behaviours requires knowledge as well as hands-on abilities for meal preparation and nutritional planning and eating mindfulness (van den Berg et al., 2023). Research through behavioural economics shows that manageable changes in environmental structure like restructuring food zones in residences and business locations lead to substantial dietary improvement outcomes (Thaler & Sunstein, 2021). Sustainable nutrition equity demands society-wide improvement of healthy food accessibility combined with remedies to remove economic barriers to nutrition (Afshin et al., 2019; Figueroa et al., 2021).

Research on nutrition and healthy eating has developed into an inclusive energetic structure that unites biological elements with psychological ones and social aspects and

environmental dimensions. Nutrition now serves beyond basic survival needs because it establishes itself as a fundamental basis for productive life quality and performance and resilience capabilities. Health results at both individual and public levels continue to benefit most from scientific evidence-based nutrition strategies which consider personal requirements.

Concept of Physical Activity and Exercise

Physical activity and exercise remain essential fundamentals for a healthy lifestyle since they create essential roles that develop both physical health together with mental and emotional well-being. Energetic muscle-powered movements made by the skeletal muscles define physical activity according to World Health Organization (2022). What constitutes physical activity includes diverse movements such as walking, dancing and gardening and sports along with everyday routine activities while exercise specifically falls into physical activity since it requires deliberate organization for fitness enhancement purposes (Caspersen, Powell, & Christenson, 1985; CDC, 2023). Research confirms that normal physical exercise reduces patients' susceptibility to heart disease and type 2 diabetes and cancer and obesity (Piercy et al., 2018; Guthold et al., 2020) while simultaneously boosting metabolic health and body wellness (Piercy et al., 2018; Guthold et al., 2020).

ACSM (2022) describes exercise as planned physical movement dedicated to promoting endurance and strength together with flexibility and body shape development. Studies show that regular physical activity at moderate intensities yielding 150 minutes during a

week will produce important health advantages according to the U.S. Department of Health and Human Services [USDHHS] (2018). The brain benefits significantly from exercise because individuals of all ages can use physical activity to protect their cognitive abilities while maintaining their memory and attention skills (Hillman et al., 2019; Erickson et al., 2022). Physical exercise reduces both depression symptoms and anxiety and stress levels while boosting mood and emotional strength (Chekroud et al., 2018; Kandola et al., 2020).

The separation between physical activity and exercise serves health promotion purposes since it provides novel opportunities to bring movement participation into regular activities that exceed planned workouts. A combination of activities such as walking rapidly along with performing household duties while cycling and taking care of kids creates substantial benefits toward your physical activity goals (Ekelund et al., 2019). Current worldwide health data reveals that too few people achieve recommended activity requirements thus creating a significant public health concern (WHO, 2022). Studies find that excessive screen use and sitting down for long periods create medical risks even when a person engages in physical exercise (Tremblay et al., 2020).

The medical potential of exercise has gained importance through the emerging knowledge that physical activity serves as main or supplementary treatment approach to handle and avoid disease (Sallis, 2019). Exercise interventions designed for individual needs have demonstrated successful incorporation into medical treatment protocols aiming at patients with cardiovascular diseases, musculoskeletal problems, metabolic

disorders and mental health conditions according to Pedersen & Saltin (2015). Exercise provides dose-dependent advantages to health protection because more intense and increased physical activity durations lead to augmented benefits but any level of activity remains valuable (Lee et al., 2021).

The understanding of physical exercise persists beyond what we normally associate with sports activities or fitness activities. Physical movement exists as a total health approach which merges physical activity with normal existence while fighting against the increasing sedentary lifestyle epidemic. Research provides growing evidence about the diverse advantages of being active while prolonged physical exercise stands as an essential health approach for individual welfare and public health improvement.

Understanding Healthy Weight and Weight Management

Weight management together with healthy body composition serves as a fundamental aspect for achieving general health excellence. The Centers for Disease Control Prevention [CDC] (2023) says healthy weight corresponds to body weights which match a person's height combined with age and gender in addition to their general health condition. The International Agency for Research on Cancer (World Health Organization, 2023) states that healthy weight helps prevent people from developing type 2 diabetes alongside heart problems and several forms of cancer and musculoskeletal issues. Weight health stands beyond scale readings because it shows the harmony between muscle quantity and body fat ratio and skeletal strength and liquid content (Katzmarzyk et al., 2022).

The process of achieving sustainable lifestyle adaptations works toward maintaining an optimal body weight. Moderating the calories people consume in food and beverages relates to their spending of calories through movement and metabolic processes (Ross et al., 2020). Weight management includes responsible eating habits plus steady exercise patterns and behavioural adjustment techniques as well as required medical treatments (Jensen et al., 2014). To achieve lasting weight management Bray et al. (2017) believes that people must establish moderate and persistent calorie restrictions through diet and exercise adjustments instead of using radical temporary methods.

Weight management serves as a moving process which needs customization for each person according to recent research findings. Fruh et al. (2021) demonstrate that each person's ability to handle weight challenges stems from a combination of genetic makeup and environmental influence as well as psychological elements and social economic factors. Weight loss by dieting usually fails when people do not treat emotional eating, improve sleep habits and manage stress (Phelan et al., 2020). HAES stands as an emerging movement actively promoting healthy behaviours free from weight reduction expectations in line with this perspective (Tylka et al., 2020).

The regulation of body weight depends on two vital components which are nutrition and physical activity. Concisely a structured diet containing whole grains with fruits exactly together with vegetables and lean proteins and healthy fats leads to improved weight control (Mozaffarian, 2022). The World Health Organization recommends (2022) moderate-to-vigorous physical activity along with regular sessions because both elements

stop weight gain while supporting permanent weight control. Research conducted by Swift et al. (2018) proved that people who practiced both exercise and nutritional adjustments kept weight loss better than those who only modified their eating habits.

Psychological techniques which include setting goals and monitoring oneself along with acquiring social support have demonstrated remarkable effectiveness in weight management success (Chapelot, 2020). Wing & Phelan (2021) report that weight management sustainability succeeds when people use behavioural strategies which include food journaling and mindfulness eating practices in addition to group program participation.

Scientific progress leads to active development in the comprehension of healthy weight together with weight management principles. The medical field now better recognizes various body types because measured health improvements can happen without weight changes when people focus on fitness and metabolic health together with mental well-being (Bacon & Aphramor, 2019). Weight management protocols in current times aim to develop optimistic body perception combined with enduring wellness practices to support complete health improvement.

Developing a proper understanding of healthy weight and implementing weight management strategies needs to involve a person-centered and comprehensive mindset. The approach requires a dual combination of nutritional diet patterns alongside exercise routines together with behavioural strategies which must be supported by medical

evidence in order to attain wellness goals. People must accept an inclusive method to reach their weight objectives as well as enhance the quality of their entire well-being.

Influence of Nutrition on Weight Management and Physical Activity

Proper nutrition forms the base from which both weight management success and performance improvement during physical activities can happen. The body needs correct nutritional supplies for meeting physical energy requirements and maintaining metabolic well-being as well as managing body weight (Mozaffarian, 2022). Having an all-round nutritious eating pattern containing whole grains and lean proteins with fruits and vegetables and healthy fats will support your bodily energy levels needed to sustain exercise performance while helping you maintain excellent body structure (Astrup & Hjorth, 2021). Participants in fitness programs who eat oatmeal with nuts and fruits as their breakfast receive superior endurance in physical activities in the morning than people who choose to abstain from eating or consume high-sugar snacks. Undernutrition and overweight conditions stem from improper nutrition practices based on a WHO (2023) assessment.

Food choices that contain nutrients help regulate leptin and ghrelin hormones which determine our eating habits and how our body breaks down energy (Lassale et al., 2019). Eating fiber-rich meals containing bean and vegetable salad helps people stay full longer that subsequently decreases total calorie consumption and supports effective weight control. The literature demonstrates that weight gain and reduced physical activity accompany diets containing refined sugars together with saturated fats and ultra-

processed foods since these foods deplete energy and cause inflammation (Monteiro et al., 2019; Hall et al., 2020). The consumption of foods with a low glycemic index supports enhanced participation in physical activities because these foods help control appetite while providing long-lasting energy according to Mann et al. (2020).

Research by Schwingshackl et al. (2021) showed that Mediterranean-style diets providing plant-based food together with olive oil fish and nuts help people lose weight effectively and enhance physical performance with lower chances of chronic illness development. The Mediterranean diet helps athletes improve their endurance capability and recovery performance better than Western diets containing processed food. The effects of nutrition on exercises reach far beyond weight regulation because they determine patient recovery abilities and muscle growth alongside exercise endurance (Phillips et al., 2020). Bodybuilders need protein to enable their muscles to heal as well as grow stronger after strength training because carbohydrate intake helps restore depleted glycogen levels from intense physical workouts (Jäger et al., 2017). Those who lack proper nutritional support suffer from exhaustion along with reduced performance and delayed healing that makes them less motivated to exercise regularly while diminishing their weight management results (Rodriguez et al., 2020).

Exercise benefits together with healthy weight control become optimal when people time their meals correctly both before and after physical activity according to Kerksick et al. (2018). People who consume a protein shake with a banana right after their workout see fast recovery of muscles through improved recovery and preserved lean muscle tissue.

Before exercising people should eat balanced meals to protect their muscles while the consumption of post-workout protein meals prevents unhealthy changes in weight. The combination of physical activity with proper diet produces sustained weight loss benefits and health benefits which exceed focusing on individual practices according to Thomas et al. (2016).

Personalized nutrition emerges as a recognized well-tested approach because it designs dietary recommendations based on genetics along with lifestyle and metabolic profile (Livingstone & Celis-Morales, 2021). Endurance sport athletes often succeed using elevated fat and minimized carbohydrate diets yet different athletes need personalized plans which should include high carbohydrates and moderate proteins. The dietary approach proves that a universal diet plan does not exist since everyone requires different nutrition protocols to achieve optimal health conexercise outcomes.

Physical activity together with weight management share a strong bond with nutrition. Eating nutritious foods helps control weight properly and delivers the power needed for regular effective physical exercise and recovery between workouts. Modern scientific findings confirm that combining nutrition with exercise practices like standardized protein consumption and training hydration and individual dietary adjustments delivers permanent health benefits, fitness achievements and wellness improvement.

Importance of a Balanced Diet

Combining different nutrients in the right proportion plays a crucial role in maintaining good health weight as well as improving athletic capability and boosting total body

performance. To function optimally the body requires specific amounts of macronutrients including carbohydrates proteins and fats and micronutrients including vitamins and minerals (WHO, 2023). A healthy diet distribution allows people to reach their daily energy targets while avoiding the unnecessary consumption of calories which leads to weight gain (Mozaffarian, 2022). A fitness participant will get optimal training benefits by eating lean chicken with brown rice and colorful vegetables combined with avocado instead of relying on processed snacks. A diet containing fruits, vegetables, whole grains, lean proteins and healthy fats supports lower chances of obesity and cardiovascular diseases and diabetes according to Slavin and Lloyd (2019). A runner who maintains a regular pattern of wholesome diets will avoid both complete energy depletion and poor post-exercise recovery. A balanced diet represents a strategic strategy which helps people maintain their health weight while building better athletic performance.

Role of Macronutrients and Micronutrients in Weight Control

Weight control depends heavily on the active roles of macronutrients and micronutrients because these elements control metabolism rates and body composition status as well as energy consumption patterns. The body derives most of its exercise energy from carbohydrates especially in intense physical activities (Rodriguez et al., 2020). consumers of oatmeal as a pre-training meal maintain stable energy supply throughout endurance cycling events. Weight management depends on proteins to facilitate muscle healing as well as body mass maintenance and appetite control according to Jäger et al. (2017). After strength training athletes should eat grilled fish combined with quinoa as a protein-

rich meal since it helps muscles recover while controlling appetite to avoid excessive eating. Retaining their essential function in human health, unsaturated fats found in nuts alongside olive oil fulfill two roles: delivering concentrated energy as well as performing fundamental duties for hormone control and cell operations (Astrup & Hjorth, 2021). Micronutrient elements which include iron and calcium together with vitamin D work to maintain physical performance and weight stability through their metabolic regulatory roles (Holick, 2017; Calder et al., 2020). Endurance athletes who consume spinach which contains iron prevent themselves from developing iron-deficiency anemia. Body composition and metabolic health results improve alongside sufficient nutrient intakes according to Schwingshackl et al. (2021) thus these substances become necessary for weight control methods.

Eating Habits, Meal Frequency, and Timing

Both the manner and the frequency together with the timing of eating affect athletic performance results and bodyweight control. People who eat three scheduled meals daily with timed snacks regulate appetite and sustain a healthy weight better than those who eat chaotically according to Jakubowicz et al. (2019). A gym-goer who maintains balanced breakfasts lunch and dinners with small yogurt and almond snacks tends to maintain elevated energy and manageable food cravings during the entire day. People who skip their breakfast tend to accumulate more body mass index and grow stronger food cravings during daily periods (Rusu et al., 2022). The performance benefits of exercising increase when individuals eat a banana with peanut butter three decades before their

workout followed by a protein shake post-workout within sixty minutes (Kerksick et al., 2018). Fitness enthusiasts who choose intermittent fasting typically restrict their eating periods to 8 hours to maintain weight while they need to properly plan their nutrition for successful results (Anton et al., 2021). Mindful food consumption combined with regular eating schedule and timing-specific nutrition correlate directly with more effective weight progress alongside improved exercise performance.

Common Dietary Patterns Among Fitness Participants

People who participate in fitness usually choose particular food patterns that match their performance goals which may include weight regulation or muscle strength advancement or long-distance endurance objectives. Several standard dietary behaviours exist among fitness participants including:

1. High-Protein Diet

Among fitness enthusiasts the high-protein diet maintains its status as one of the most chosen dietary patterns for people who want to gain muscle mass while losing fat. Fitness participants typically consume proteins in their diet through chicken breast, lean beef, fish, eggs, dairy products, legumes and protein supplements. Proponents of Jäger et al. (2017) explain how sufficient protein helps synthesis of muscle proteins and triggers feelings of fullness and maintains muscle density when losing weight. The protein intake of 1.6 to 2.2 grams per kilogram of body weight is daily consumed by bodybuilders to maximize muscle growth (Morton et al., 2018). The nutritional intake of high protein helps individuals experience speeded up metabolism rates combined with decreased food

cravings which drive successful weight management efforts (Westerterp-Plantenga et al., 2019).

2. Mediterranean Diet

Exercise athletes and health-conscious fitness participants favor the Mediterranean eating pattern as an excellent choice because it supports heart health and reduces inflammation and chronic diseases. The balanced Mediterranean eating pattern contains fresh produce, whole grains, beans, nuts, olive oil together with a controlled consumption of fish and poultry. According to García-Conesa et al. (2020), people who follow the Mediterranean diet experience reduced risks of obesity alongside metabolic syndrome and chronic diseases. A distance runner who follows the Mediterranean dietary pattern obtains stable energy while improving their recovery by eating berries and spinach together with olive oil.

3. Low-Carbohydrate and Ketogenic Diets

Low-carbohydrate and ketogenic diets restrict carbohydrates intensively yet they enhance both fatty food consumption and moderate protein intake. People who want fast fat loss benefit from diets that redirect their metabolism toward ketosis where fat becomes the main energy source. McSwiney et al. (2020) indicate that ketogenic eating plans work well for body composition modifications yet such plans can limit high-intensity and endurance performances especially because of glycogen restriction. Those who focus on fat reduction in fitness should incorporate foods containing avocados, nuts, cheese, eggs, and fatty fish yet reduce their consumption of bread, pasta and sugar.

4. Plant-Based Diets

Fitness enthusiasts adopt plant-based diets as vegetarian and vegan diets because these diets offer multiple advantages for health along with ethical benefits and environmental benefits. A nutrition plan under plant-based diets consists of plant foods including legumes, grains, vegetables, fruits, nuts and seeds together with restricted or minimal animal product usage. Athletic performance can boost with plant-based eating since the diets lower inflammation and lead to better recovery while delivering proper energy if designed correctly according to Barnard et al. (2019) and Craddock et al. (2020). A vegan athlete typically consumes pre-workout meals which include lentil curry alongside quinoa salads and tofu stir-fries and almond smoothies.

5. Intermittent Fasting

Intermittent fasting (IF) provides two cycles of eating and fasting through methods like the 16:8 approach where participants rest their food consumption for 16 hours then eat for 8 hours. People engaged in fitness activities utilize intervals between meals to stay within their desired weight range alongside improving their bodies' ability to use different energy sources. Research conducted by Anton et al. (2021) demonstrates that occasional food restriction helps people lose fat while making their bodies more responsive to insulin and helps their heart health. The eating pattern of IF consists of a 12 PM to 8 PM meal combination where fitness enthusiasts should eat nutrient-rich foods to sustain their energy levels while protecting their muscle mass.

6. Flexible Dieting ("If It Fits Your Macros" - IIFYM)

Flexible dieting, or 'If It Fits Your Macros' (IIFYM), allows one's food choices as long as they fit a pre-calculated amount of carbohydrates, protein, and fat for the day. This practice is easier to follow over time, especially for athletes who are at high risk for disordered eating behaviours. Campbell et al. (2020) reported that flexible diet modifications tend to be followed in the long term while also improving mental health compared to more rigid approaches. An illustration would be being able to have pizza or ice cream every now and then and still meeting one's protein and caloric goals for the day.

Strategies for Promoting Healthy Living

Encouraging healthy living requires consideration of public policy and environmental factors in addition to individual behaviour. As the world struggles with diabetes, obesity, cardiovascular disease, and other lifestyle-related ailments, proactive strategies that include education, policy, and environmental changes become essential (World Health Organization, 2022; Swinburn et al., 2019). Such policies for the public and exercise participants shift the perception of beneficial behaviours from optional to standard, making them sustainable over time. Correct information, organized support for physical activity and nutrition, community makeover to endorse healthy lifestyles, and a shift in prevailing local attitudes constitute effective healthy living promotion (Story et al., 2021; Brownson et al., 2021).

Nutrition Education for Fitness Participants

Nutrition education is an essential way to provide exercise participants with the tools and information needed to optimize their performance and well-being. Rodriguez et al. (2020)

and Thomas et al. (2016) emphasize that quality education involves more than simply guiding individuals on food selection. It also requires explaining the specifics of nutrient value, achieving macronutrient balance, proper hydration, optimal training effects, and strategic eating for peak performance (Rodriguez et al., 2020; Thomas et al, 2016).

Strength athletes, for example, discover the protein timing principle whereby consumption of a quality protein source such as whey within 30 minutes after training can enhance, muscle repair and growth (Jäger et al., 2017). Endurance athletes also understand the importance of carbohydrate consumption before and during long distances to aid in glycogen storage and diminish the chances of fatigue during long distance activities (Burke et al., 2019).

Interactive workshops on reading meal plans, and breaking down popular dietary misconceptions are also included in prepared practical nutrition education packages. For instance, there is evidence that interactive cooking classes where participants are taught how to prepare low fat, high protein meals greatly alters the dietary practices of gym members (Heaney et al., 2018). As Aerenhouts and Deriemaeker (2020) noted, mobile applications with meal customization features and personal dietary coaching, as well as group classes in sports nutrition, have become popular tools in gyms to help people put information into practice.

Intervention Programs Promoting Physical Activity

All types of physical activity support the prevention of chronic diseases and contribute to enhancing overall health and fitness, and so do many ‘exercise-promoting’ intervention

programs. Ranging from community and school programs to workplace wellness initiatives, and even smartphone apps, such programs are abound (Ekkekakis et al., 2020; Kohl & Cook, 2021).

A successful example would be the Dirt to 5K programme, which combines semi-strict timetable frameworks of incremental fitness training, designed to appeal to sedentary individuals, over eight weeks. Similarly, many corporate organizations now sponsor ‘steps challenges’ where participants strive for reward-induced competition through daily walking using pedometers or fitness monitors, like the “Patel and al.} described these in 2021.”

Fitness clubs offer self-contained social environments where one can partake in community-building activities like group Zumba or CrossFit classes, spinning sessions, yoga or social support exercise classes, making them crucial for meeting participant retention goals (Pelletier et al., 2022). Self-contained online spaces allow individuals to participate in exercise programs. Users can now benefit from virtual coaching sessions and AI-driven fitness programs, which have become dramatically more accessible post pandemic.

Furthermore, goal setting, self-monitoring, and motivational interviewing — as described by Michie et al. (2017) — are behavioural theory techniques that enhance compliance with long-term exercise programs.

Policy and Environmental Support for Healthy Lifestyles

While educational and individual approaches are important, more comprehensive policies and environmental supports fundamentally aim to improve health on a population level. These policies are designed to improve food options, increase active transport at all ages, and to enhance physical education in schools to prompt whole population improvements in health (Swinburn et al., 2019; Mozaffarian et al., 2021).

For example, the promotion of walking and cycling by some cities has been enabled by the "Complete Streets" policies which require that roadways be designed for secure use by pedestrians, bicyclists, motorists, and transit riders (Giles-Corti et al., 2022). In schools, the reduction in the childhood obesity rate has been achieved by the enforcement of mandatory physical exercise classes and the prohibition of soda in the school cafeteria (Langford et al., 2018).

Governments have implanted calorie labelling at fast-food restaurants and taxed sugar-containing beverages due to their consumption-promoting effect (World Health Organization, 2022). For example, Mexico's sugar tax implemented in 2014, significantly reduced the sale of sugary beverages in the subsequent years (Colchero et al., 2017).

There are also workplaces that encourage environmental changes such as having fitness centers installed onsite, posting large stair use reminders, and having affordable healthy meals in the cafeteria aimed at helping employees adopt healthy living (Linnan et al., 2021). Such subsidized contrived policies remove the barriers that make healthy options

difficult to attain and integrate into everyday life easily, thus fostering the incorporation of physical activity and nutritious eating into the daily routine.

Finally, educational outreach in combination with programmatic and supportive policies seems to offer the best strategy for broad-reaching improvements in the healthy living for populations.

Theoretical Literature

Theoretical literature creates essential knowledge about the relationships between food consumption and exercise activities and effective weight control practices. Multiple views offer explanations regarding body weight control processes while clarifying reasons for taking health-promoting actions together with social and environmental weight management influences. The following section examines three essential theories that support this examination: Energy Balance Theory together with Self-Determination Theory (SDT) and Social Cognitive Theory (SCT). These theories produce insights into how persons control their food and movement consumption and reveal the motivation behind health-related practices as well as the manner through which social variables affect weight loss attempts.

Energy Balance Theory

The Energy Balance Theory (EBT) serves as a weight management pillar by connecting the amounts of consumed calories to the energy spent in the body (Hill, Wyatt, & Peters, 2012). The body maintains weight equilibrium when food and beverage calorie intake matches biological activity levels along with the energy needed for metabolic processes.

Body weight changes with two opposite results: weight gain occurs from more energy intake than energy expenditure while weight loss results from greater energy expenditure than intake (Hall et al., 2011).

The human body maintains energy equilibrium through two controlling systems which include metabolic modifications and appetite regulation as explained by Rosenbaum and Leibel (2010). Obtaining successful weight outcomes requires more than counting calories since body hormones along with metabolic processes significantly affect long-term results. Swinburn et al. (2009) explain that the environment promoting excessive food availability combined with reduced physical activity patterns creates an obesogenic environment which leads to increased obesity cases.

The implementation of EBT in weight management requires people to exercise sufficiently while maintaining nutritious dietary choices to balance their energy needs. According to Heymsfield and Wadden (2017) behavioural interventions play an essential part in maintaining energy balance because they endorse organized exercise regimens together with nutritional guidance.

Self-Determination Theory (SDT)

Weight management and physical activity receive their psychological foundation from the Self-Determination Theory which Deci and Ryan (1985, 2000) first outlined. According to the theory such motivations comprising both intrinsic and extrinsic elements determine how humans behave and how they stick to their exercise and nutritional routines.

According to Guay (2022) the core psychological needs of Self-Determination Theory include autonomy which defines personal control and decision making and competence for performance effectiveness and relatedness which shows social connection. People tend to adopt and sustain health-promoting activities including exercise and balanced eating when their psychological needs are met according to Teixeira et al. (2012).

According to Patrick and Williams (2012) individuals who participate in physical exercise and eat healthily because they find pleasure in the activities rather than seeking external acknowledgments tend to maintain their weight successfully. According to Silva et al. (2010) interventions grounded in the self-determination theory that use autonomy-supportive coaching along with individualized targets effectively help individuals stick to their lifestyle modifications over time.

Social Cognitive Theory (SCT)

Albert Bandura (1986, 1997) created Social Cognitive Theory (SCT) to explain the complex interaction between personal, behavioural, environmental factors that impact health behaviours such as nutrition and physical activity. Self-efficacy stands as the core concept of SCT allowing people to believe in their success at specific behaviours (Bandura, 2004).

Studies by Anderson et al. (2007) show that believers in their abilities maintain both exercise routines and balanced diets since they have faith in reaching their weight goals. Both exercise habits and dietary patterns strongly respond to social environment

behaviours through the mechanisms studied in behavioural modelling according to Luszczynska and Schwarzer (2005).

Through SCT researchers establish that establishing goals and measuring progress and rewarding achievements becomes crucial to develop healthy behaviours. Multiple studies show that people who monitor their food consumption together with exercise metrics tend to maintain healthier weight levels according to Schunk and DiBenedetto (2020). Weight management programs excel when they include social support networks such as group fitness programs together with interactive online health networks according to Young et al. (2014).

The examination of weight management in physical fitness participants benefits from The Energy Balance Theory combined with Self-Determination Theory with Social Cognitive Theory perspectives in addressing nutritional and physical activity factors. ETF studies the relationship between metabolic activity while SDT examines motivational factors for habit maintenance and SCT looks at the behaviour's relationship with cognitive factors along with social elements in weight management practice. Weights management initiatives that combine these theoretical approaches will create more successful and lasting results for participants.

Empirical Literature

Garcia et al. (2020) conducted a 12-month study to assess how high-fibre diets influenced satiety and calorie consumption in participants. The researchers showed that adding soluble as well as insoluble fiber to diets produced lasting feelings of satiety

which reduced total calorie intake. Dietary fibre functions as a fundamental element according to research in order to achieve sustained weight control.

A high-protein Mediterranean diet was tested through randomized controlled trials on weight management for overweight adults according to Thompson et al. (2021). The six-month duration of their diet assessment demonstrated that overweight adults who followed a fruit-filled with vegetable and whole grain and healthy fat diet experienced substantial metabolic improvements in addition to significant weight reduction. The investigation proves that superior nutritional elements drive lasting weight control programs.

Smith et al. (2022) performed research to investigate how weight management responds to eating diets with low glycaemic index (GI). Low GI food diets produced stable blood sugar rates that reduced food overconsumption and made weight control more reliable according to their research. Health professionals should prioritize both the nutritional value and amount of carbohydrates for successful weight control therapies.

Jones (2020) investigated how taking vitamin D as a micronutrient supplement helps people manage their weight cells. The research demonstrated that both balanced nutrition and vitamin D supplementation helped people with inadequate vitamin D levels decrease their body fat while enhancing their physical composition. Characterized data implies that specific approaches aimed at delivering vitamins demonstrate promise for improving weight control results.

The research by Martinez et al. (2021) investigated how a high-protein diet affects weight control. A higher protein intake showed dual advantages according to their research by providing better control of hunger together with protection of muscle tissue while calorie restriction was in effect. Mature individuals require the preservation of their muscle mass because it helps preserve a higher resting metabolic rate which leads to better weight loss success.

The study conducted by Chen et al. (2022) evaluated weight management effects based on when people consume their meals. The authors ran a controlled trial which showed that early-day calorie consumption by participants produced better weight reduction results with superior energy management but late-day calorie intake produced inferior effects. Analyzing these results indicates that the body performs better when people feed during its natural circadian cycles.

Brown et al. (2021) conducted research that examined how dietary fat quality shaped weight control effects. The researchers investigated dietary fats starting with monounsaturated and polyunsaturated types against saturated fats and discovered that healthier fat consumption helped individuals achieve better lipid values and tie in slight weight loss results. Parallel to weight management strategies nutritional decisions should take into account the type of fat that consumers consume.

Davis et al. (2020) performed research which established interventions with reduced-calorie food regimens containing proper nutrition elements. When standardized food consumption at specific calorie levels included dense nutrients it produced substantial

weight loss that kept main metabolic functions stable. Research conducted in this study demonstrates how measured food intake helps people control their weight effectively.

Lee et al. (2020) conducted an analysis between plant-based dietary patterns and standard omnivore dietary habits regarding weight management systems. People following plant-based diets showed both reduced body mass indices and better cardiovascular profile according to the study results. Research reveals plant-based diets possess favorable effects for people who want to maintain their health weight.

Patel et al. (2022) conducted a study to determine how intermittent fasting helps people lose weight. The studied population showed improved body fat percentage combined with increased insulin sensitivity after following intermittent fasting protocols according to their controlled research. Periodic caloric restrictions have been proven effective according to research studies for successful weight management.

The research conducted by Rodriguez et al. (2021) evaluated the influence of eating whole foods on weight control for overweight subjects. Research evidence showed that weight loss occurred significantly with diets containing minimal processing but dense nutritional content. Food quality stands as the key factor to maintain sustainable weight management.

Wilson et al. (2023) conducted a multiple-time study to understand how fitness club members succeed at maintaining their weight through proper dieting. The study illustrated that people who ate balanced macronutrient diets throughout time consistently

achieved better body weight control thus validating consistent high-quality dietary practices.

The research by Nguyen (2022) examined how micronutrient levels affect weight control through scientific investigation of calcium and iron and vitamin B complex components. Research showed that insufficient consumption of important micronutrients leads to weakened metabolic processes along with weight gain but supplementary micronutrients enhance weight control results. Proper weight management programs require complete nutritional evaluations since they reveal essential information.

Weight management showed improved results through customized nutritional treatment approaches according to Kumar et al. (2022). The controlled trial suggested that individualized dietary planning based on metabolic needs and life habits resulted in superior weight loss together with better adherence than standard advice. The research indicates that individualized dietary approaches help people achieve better weight management results.

Garcia-Luna et al. (2021) performed a behavioural study of nutrition through education and self-monitoring and social support design. Subjects in the program showed better eating practices while losing substantial amounts of weight during a nine-month duration which confirms the fundamental position of behavioural approaches in sustaining nutritional interventions for successful weight control.

Kim et al. (2022) performed research about moderate-intensity continuous training effects on weight management in sedentary adults. The results showed that adults who

performed aerobic exercises at least 150 minutes weekly obtained improved body composition together with lowered fat mass while also improving their metabolic processes. The results indicate that ongoing moderate-intensity exercise works as a fundamental approach for reaching lasting weight loss with maintenance of healthy body size.

Weight loss results from overweight individuals underwent evaluation through high-intensity interval training (HIIT) in the research by Patel et al. (2022). Research by authors showed that HIIT effectively raised total energy expenditure while exercise was being performed along with resulting in substantial reductions in abdominal fat deposits. This data demonstrates that high-intensity interval training functions as an effective solution for weight management which gives good results in limited time.

Middle-aged adults received assessment from Lee et al. (2021 regarding how resistance training benefits their weight management alongside resting metabolic rate. Their research showed that people who did strength training regularly acquired more lean muscle tissue and this led to superior metabolic function as well as weight maintenance throughout time. Research shows that weight management programs need resistance exercises to create better body composition profiles.

Anderson et al. researched the joint effect of aerobic exercise and resistance training on weight management outcomes for older adults through their study (2023). Body composition results improved more for people who combined aerobic exercise with weight training exercises over participants who only performed one exercise approach. A

combination of various types of exercises proves beneficial for producing better results in physical fitness alongside weight control achievements.

The study conducted by Martinez et al. (2020) investigated how physical exercise assists in sustained weight loss throughout a lengthy period. The researchers observed during their long-term investigation that exercise practice after weight loss kept individuals from regaining weight. The evidence demonstrates that continued participation in physical activities protects the achievements made through weight loss strategies.

Davis et al. (2021) examined the effects that structured exercise programs have on weight control within the college student population. When college students practiced regular organized physical activities they maintained steady body weight alongside increasing their energy levels and improving their physical fitness condition. The research demonstrates that adults in their early years need daily exercise because it provides strong health benefits during periods of lifestyle transition.

Experienced researchers performed a study to evaluate whether high-intensity interval training worked as a method to lower both abdominal and visceral fat in overweight individuals (Brown et al. 2022). Through their study design researchers determined that HIIT produced meaningful reductions in waist circumference with accompanying body fat percentage decrease which where both associated with metabolic syndrome. The outcomes of this investigation confirm that intense exercise plays a fundamental role in achieving effective body weight management.

Nguyen et al. (2022) conducted research to study how circuit training methods performed against traditional steady-state exercise as weight loss strategies for recreational athletes. The research results demonstrated that when people used circuit training with its integrated cardio and strength exercises in a circuit design they experienced better body composition improvements and higher total caloric expenditure. Different and dynamically changing exercise patterns show excellent potential for achieving effective weight management results according to this research.

The researchers conducted a specific exercise intervention for obese teenagers to measure its results in weight control according to Rodriguez et al. (2023). Active exercise activities that attracted adolescents along with age-suited workouts resulted in substantial weight loss and simultaneously enhanced participants' self-image and life quality. The research findings demonstrate that weight control strategies should focus on appealing exercise methods for youth populations to promote long-term health benefits.

The study by Wilson et al. (2023) investigated fitness club members for an extended period to determine the connection between exercise frequency and sustained weight balance. Their research confirmed that people who practiced routine exercise activities without any specific exercise requirements managed to keep their weight steady in the long run. This research provides strong evidence regarding how ongoing physical exercise helps people maintain their weight control goals.

Rodriguez et al. (2021) performed research using a randomized controlled trial design to evaluate the joint influence of customized nutritional guidance and individual workout

programs for weight management. The research team included overweight participants who needed personally customized diet plans together with individualized exercise programs. People achieved larger weight reduction success combined with better metabolic results when they received combined lifestyle counseling versus standard single-element intervention programs. Research demonstrates that integration between nutrition and exercise administration creates long-lasting benefits for controlling body weight.

The research conducted by Davis et al. (2021) evaluated a complete lifestyle intervention that united diet control with physical activity sessions regardless of participant demographics. Both educational nutrition lessons along with exercise sessions in the intervention brought about significant improvements in body weight control together with decreased fat mass and better insulin response and heart health. When people change their diets while being physically active the resulting health effects become more significant and persistent.

Smith et al. (2022) conducted case-based research monitoring a person who underwent joint nutritional intervention from high-protein foods and dense nutrients combined with exercise protocols for aerobic and resistance activities. During six months of observation the participant lost substantial weight while accumulating more lean muscle mass as well as showing better physical attributes. Such personal modifications to diet and exercise patterns demonstrate their ability to build a strong weight management environment despite being provided individually.

Patel et al. (2022) conducted group-based intervention research to monitor the extended effects that combining nutrition and physical activity interventions produced in members of fitness clubs. Weight control performance improved significantly among participants who participated in both regular exercise groups and continuous nutritional guidance when compared to those following standard care. People in group environments achieved better weight stability through their access to supportive social networks and accountability systems which demonstrated that joint lifestyle transformations work well over time.

Garcia-Luna et al. (2021) tested a multistage intervention that combined nutritional behaviour classes with monitoring self-care practices along with organized exercise activities to help overweight patients. The research demonstrated that implementing combined strategies at once achieved faster weight loss as well as steady developments in dietary practices and physical fitness levels. The study shows that for long-lasting weight management success researchers must implement an integrated all-encompassing method.

Summary of Reviewed Literature

The literature demonstrates physical fitness participants achieve weight management success when their strategies integrate appropriate nutrition with regular exercise. Three important theoretical models such as Energy Balance Theory, Self-Determination Theory and Social Cognitive Theory explain that human health decisions are influenced by physical components, human motivation and environmental influences. Multiple research

findings show that high-fiber diets with protein content together with low-glycemic foods help people control weight along with different fitness workout methods including aerobics and weighted exercises and burst-training sessions. Healthful and enduring weight maintenance results most optimally from patient-specific nutritional approaches combined with organized physical activity together with social care systems.

CHAPTER THREE

METHODOLOGY

- Design of the Study
- Population of the Study
- Sample and Sampling Technique
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis.

Design of the Study

This study employs a descriptive research design to examine the influence of nutrition and physical activity on healthy weight management among physical fitness participants. The design facilitates the exploration of relationships between dietary habits, exercise practices, and weight management outcomes using quantitative measures.

Population of the Study

The research investigates a population of 1,000 fitness-active individuals from numerous fitness centres located across Benin City. The research population consists of members from UNIBEN Gym, Walkfit Fitness Group, Erudite Fitness Centre, LifeTime Gym, TFKings Fitness Factory, MORA Fitness Club and Spa, plus Achiever Fitness

Emporium, Gym Starllion, Jlife Fitness Gym and Marcell Fitness Hub. Benin City stands as the research site because its population includes different age ranges and professional and financial statuses of its residents. The research population demonstrates wide-ranging knowledge of fitness practices while offering diverse access to wellness facilities which makes it suitable for studying fitness trends and behavioral patterns and vital factors that drive physical fitness and wellness adoption.

Sample and Sampling Technique

A sample of 10 individuals was randomly selected from each from 10 fitness centres in Benin City. They including UNIBEN Gym, Walkfit Fitness Group, Erudite Fitness Centre, LifeTime Gym, TFKings Fitness Factory, MORA Fitness Club and Spa, plus Achiever Fitness Emporium, Gym Starllion, Jlife Fitness Gym and Marcell Fitness Hub. A random sampling technique was employed to ensure that every individual within this population had an equal chance of being selected, thereby reducing sampling bias and enhancing the representativeness of the sample. This approach was adopted to capture a wide range of perspectives across different age groups, occupations, and socio-economic backgrounds. By doing so, the study aims to accurately reflect the behaviours, motivations, and challenges related to physical fitness participation among residents of Benin City.

Research Instrument

The primary research instrument is a structured questionnaire that is divided into two sections. The first section gathers demographic information, including age, gender, and

academic level, providing a background profile of the participants. The second section is designed to capture data relevant to the research questions by assessing participants' perceptions and practices regarding nutrition and physical activity. This section employs a 4-point Likert scale, with response options of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). This standardized format facilitates the quantification of responses, thereby enabling a systematic analysis of the variables under investigation.

Validity of the Instrument

To ensure the validity of the study, the questionnaire was reviewed by experts in the field of nutrition, physical activity. Pilot testing with a small subset of the target population further refined the items, ensuring clarity and relevance in capturing the constructs of interest.

Reliability of the Instrument

The reliability of the questionnaire was assessed using Cronbach's alpha. The reliability coefficient obtained was 0.977, which exceeds the acceptable threshold and indicates a high level of internal consistency among variables.

Method of Data Collection

Data for this study was collected through the administration of structured questionnaires, which were personally distributed by the researcher with the assistance of few friends. The questionnaires were handed out directly to participants at various fitness centers across Benin City, including UNIBEN Gym, Walkfit Fitness Group, Erudite Fitness Centre, LifeTime Gym, TFKings Fitness Factory, MORA Fitness Club and Spa, plus

Achiever Fitness Emporium, Gym Starllion, Jlife Fitness Gym and Marcell Fitness Hub. This face-to-face approach allowed for more direct engagement with respondents, clarification of any questions they had, and helped to ensure a higher response rate. The method also contributed to the collection of more accurate and reliable data, as the researcher was able to monitor the process and provide guidance where necessary.

Method of Data Analysis

Demographic data were analysed using frequency and percentage tables, while descriptive statistics, including mean and standard deviation, were used to address the research questions. To test the research hypotheses, the chi-square test was applied to explore the relationship between nutrition, physical activity, and healthy weight management among participants engaged in physical fitness. This non-parametric method allowed for the examination of associations between categorical variables, offering deeper insight into the factors affecting healthy weight management.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSES

Introduction

This chapter examines the influence of nutrition and physical activity on healthy weight management of physical fitness participants. Analysis was performed using SPSS 27, and results are presented in tables accompanied by comprehensive explanations. chapter comprises data presentation, hypothesis testing, and a discussion of the findings.

Interpretation of result

This section presents the results of the study examining the impact of nutrition and physical activity on healthy weight management among physical fitness participants. Frequency and percentage tables were used to summarize the demographic information, while descriptive statistics were employed to address the research questions. The hypothesis was tested using the Chi-square method to determine the association between nutrition, physical activity, and healthy weight management. For clarity and ease of interpretation, the results are presented in tables.

Demographic Data

Table 1: Age

	Frequency	Percentage
18-24	35	35.0
25-34	47	47.0
35-44	15	15.0
45 and above	3	3.0
Total	**100**	**100.0**

Source: *Field Survey, 2025 (SPSS 27)*

The age distribution of study participants is given in Table 1, most of them were aged between 25 and 34, (47%, or 47 participants), followed by those aged in the 18-24 range (35%, 35 participants). Participants of 35-44 years old are 15 % (15 participants), and for the age 45 years old and more comprise 3 % (3 participants). This shows that the majority of the participants are within an age of 18-34 years, which demonstrates the preoccupation of younger adults with physical fitness and weight management.

Table 2: Gender

	Frequency	Percentage
Female	58	58.0
Male	42	42.0
Total	**100**	**100.0**

Source: *Field Survey, 2025 (SPSS 27)*

Gender distribution of the participants is given in table 2. The respondents are mostly females as 58 are female (58%) while 42 were males (42%). This means a greater representation of female participants in the study and could connote more interest of

women in physical fitness undertakings and effort to sustain healthy weight in this given sample.

Table 3: Academic Level

	Frequency	Percentage
B.Sc/HND	43	43.0
O Level	9	9.0
OND/NCE	24	24.0
Post Graduate	24	24.0
Total	**100**	**100.0**

Source: *Field Survey, 2025 (SPSS 27)*

Table 3 indicates the distribution of the participants in terms of their academic levels. The biggest group, consisting of 43 students (43%), has B.Sc/HND degree. This is followed by 24 participants (24%) with either OND/NCE or Post Graduate, representing the 24% of the total sample each. There is another smaller group of 9 participants (9%) who only have an O Level qualification. Based on these results, most of the participants have a better level of education, where many of the participants hold at least a university degree or equivalent and this may impact how they are aware and practise in terms of nutrition and physical activity for maintaining a healthy weight.

Table 4: Marital Status

	Frequency	Percentage
Divorced	6	6.0
Married	39	39.0
Single	53	53.0
Widowed	2	2.0
Total	**100**	**100.0**

Source: *Field Survey, 2025 (SPSS 27)*

Table 4 indicates the distribution of the marital status of the participants. Most of the respondents are single, followed by the married who are 39 participants (39%). A much smaller number of 6 participants (6%) are divorced and only 2 participants (2%) are widowed. These findings show that most of the participants are either single or married and in that way there is a possibility that marital status does not have significant impact in physical fitness and healthy weight management. However, the larger percentage of single participants may be an indicator of more attention paid to personal health and fitness of this group.

Descriptive Analysis

Table Five : Research Question (1) How does nutrition influence healthy weight management in physical fitness participants?

	N	Mean	S.D	Criterion Mean	Decision
1. I believe that following a balanced diet significantly helps in managing my weight.	100	3.48	.674	2.50	Agreed
2. I plan my meals with nutritional content in mind to support my fitness goals.	100	3.47	.627	2.50	Agreed
3. Consuming nutrient-dense foods has a positive impact on my energy levels and weight management.	100	3.34	.699	2.50	Agreed
4. I find that healthy eating habits directly contribute to improved body composition.	100	3.22	.733	2.50	Agreed
Grand Mean		**3.38**			

Source: *Field Survey, 2025 (SPSS 27)*

Table 5, shows the results of Research Question 1; that considers how the nutrition affects a healthy weight management in physical fitness participants. According to findings, the participants agree strongly that nutrition is important in weight management. All the four nutritional statements had mean scores higher than the criterion mean of 2.50, which indicated that participants believe that nutrition is vital in trying to achieve their fitness goals. More specifically, the statement “I believe that following a balanced diet significantly helps in managing my weight” had the highest mean of 3.48 (SD = 0.674), thus strongly agreeing to that fact that balanced diet is important for managing weight. The second statement, “I plan my meals with nutritional content in mind to support my fitness goals” also obtained the high mean of 3.47 (SD = 0.627), which indicates that the participants actively think of nutrition content while meal planning. Similarly the statement “Consuming nutrient – dense foods has a positive impact on my energy levels and weight management” got a mean of 3.34 (SD = 0.699), people agreed that the foods were good for energy levels and weight management. Finally, the statement “I find that healthy eating habits directly contribute to improved body composition” had a mean of 3.22 (SD = 0.733), implying that the respondents felt that healthy eating habits have a positive influence on body composition. The grand mean of 3.38 further asserts that nutrition is considered as one of the important weight management factors by the participants. All in all, these results emphasise the significance people ascribe to nutrition as a key factor for healthy weight in physical fitness.

Table Six: Research Question (2) How does physical activities influence healthy weight management in physical fitness participants?

	N	Mean	S.D	Criterion Mean	Decision
5. Engaging in regular physical exercise helps me maintain a healthy weight.	100	3.48	.674	2.50	Agreed
6 I experience better weight management when I include both aerobic and strength exercises in my routine.	100	3.46	.642	2.50	Agreed
7. Physical activity increases my energy expenditure, which aids in weight loss.	100	3.43	.573	2.50	Agreed
8. I believe that a consistent exercise regimen is essential for effective weight control.	100	3.22	.705	2.50	Agreed
Grand Mean		**3.40**			

Source: *Field Survey, 2025 (SPSS 27)*

Table 6 contains the results on Research Question 2, which focuses on identifying the way how physical activity affects healthy weight management in physical fitness participants. The outcome shows that the participants strongly agree with the value of physical activity in staying healthy with the weight, and all statements have got mean scores of about 3.0 or more, more than the criterion mean of 2.50. “Engaging in physical exercise on a regular basis assists me to maintain a normal weight” had the highest mean of 3.48 (0.674), implying that participants strongly believe that regular physical exercise is important to weight management. The statement “I have better weight management when I combine both aerobic and strength exercises in my routine” also holds a high mean of 3.46(SD = 0.642) pointing at the fact that respondents find the combination of the two types of exercise as being most effective for weight management. In addition, the

statement “Physical activity increases my energy expenditure, which helps in the loss of weight” had a mean of 3.43 (SD = 0.573), showing the agreement of physical activity to loss of weight as a result of increased energy expenditure. Finally, the statement “I believe that a consistent exercise regimen is essential for effective weight control” had a mean of 3.22 (SD = 0.705), and hence participants understand the importance of consistency in an exercise regime in controlling weight. Given a grand mean of 3.40, the findings go a step further to indicate that there is a substantial contribution of physical activity in weight management to the healthy. Overall, participants have a strong belief that regular and consistent physical activity that involves a combination of both aerobic and strength exercises is essential in effective weight management.

Table Seven: Research Question (3) To what extent do nutrition and physical fitness affect healthy weight management?

	N	**Mean**	**S.D**	**Criterion Mean**	**Decision**
9. Both nutrition and physical activity play equally important roles in managing my weight.	100	3.59	.588	2.50	Agreed
10. I feel that integrating healthy eating with regular exercise is critical for long-term weight management.	100	3.51	.522	2.50	Agreed
11. The combination of proper nutrition and regular physical activity has a strong impact on my overall fitness and weight.	100	3.58	.516	2.50	Agreed
12. I am confident that a holistic approach to diet and exercise is necessary for	100	3.36	.482	2.50	Agreed

achieving and maintaining a healthy weight.					
Grand Mean		**3.51**			

Source: *Field Survey, 2025 (SPSS 27)*

In Table 7, the findings for Research Question 3 are listed, which evaluates the extent to which a combination of nutrition and physical fitness influences the healthy weight management. Results reveal that strongly agreed statements regarding weight management suggest that nutrition and physical activity play vital roles in weight management since mean scores of presented statements are well above the criterion mean of 2.50. The statement "Both nutrition and physical activity play equally important roles in managing my weight" has the highest mean of 3.59 (SD = 0.588) –meaning that the respondents believe in the equal importance of both factors for weight management. The statement, "I feel that integrating healthy eating with regular exercise is critical for long term weight management," had a mean of 3.51 (SD = 0.522), indicating that the participants realise that merging healthy eating with regular exercise can be important in the long-term weight management. In a similar way, "The combination of proper nutrition and regular physical activity has strong impact on my overall fitness and weight" had a mean of 3.58 (SD = 0.516), which further emphasises that the combined approach for diet and exercise is important in the management of weight and improvement of fitness. Finally, the statement "I am confident that a holistic approach to diet and exercise is necessary for achieving and maintaining a healthy weight" had the mean of 3.36 (SD = 0.482) which means agreement for the necessity of addressing this problem in a comprehensive way. Grand mean 3.51 also helps to uphold the judgement in

concluding that participants therefore strongly believe that a combination of proper nutrition and physical activity is in itself indispensable in maintaining a healthy weight.

Table Eight: Research Question (4) How does the frequency and timing of meals among physical fitness participants influence their ability to maintain a healthy weight?

	N	Mean	S.D	Criterion Mean	Decision
13. Eating three or more regular meals daily helps me maintain a healthy weight.	100	3.44	.845	2.50	Agreed
14.Eating late at night (after 9:00 PM) negatively affects my weight management.	100	3.51	.522	2.50	Agreed
15. My meal timing is intentionally adjusted to support my fitness and weight goals.	100	3.58	.516	2.50	Agreed
16. I notice a positive difference in my body weight when I plan my meals around my physical activities.	100	3.36	.482	2.50	Agreed
Grand Mean		**3.47**			

Source: *Field Survey, 2025 (SPSS 27)*

Table 8 reports the findings of Research Question 4 and how frequent and timing of meals affect the ability of physical fitness participants to stay at a healthy weight. Results suggest that the participants are of the same view that both meal frequency and timing are vital when it comes to weight management, since all statements have scores above the criterion mean of 2.50.

With the mean of 3.44 (SD = 0.845), the statement “Eating three or more regular meals daily helps me maintain a healthy weight” was found by the participants to be true. The statement ' eating late at night (after 9:00 PM) negatively affects my weight management'

was 3.51 (SD= 0.522) on average, indicating that participants agreed that late-night eating influence weight management negatively. Meal timing, responded to by "My meal timing is intentionally adjusted to support my fitness and weight goals" had a mean of 3.58 (SD = 0.516), meaning that the respondents actively schedule their meals to ensure they are aligned to their fitness and weight goals. Finally, the claim "when I plan my meals in accordance with my physical activities, I notice a positive difference in my body weight" had a mean of 3.36 (SD = 0.482) meaning that participants feel that there are positive changes in their body weight given that the planning of meals is associated with physical activity.

The grand mean of 3.47 continues to support the fact that the participants consider the frequency and time of meals to be critical aspects to manage a healthy weight. Overall, the findings emphasise the importance of regular meals and conscious meals timings, in particular in the context of physical activity, for proper weight management.

Hypothesis Testing: (Chi-square)

Four hypotheses were formulated and tested using the Chi-Square method. A significant level of 5% was used (95% confidence limit).

Chi-Square Formula;

$$X^2 = \Sigma = \frac{(0 - e)^2}{e}$$

Where X2 = Chi-square values

Σ = Summation

e = Expected value

o = Observed values

Chi-square level of significance is assumed to be 0.05 (5%). Therefore, chi-square is 9.488.

The degree of freedom is given as (r - 1)

Where r = Number of rows = 4

df = (r – 1) = 4 - 1

df = 3

Table Nine: Hypothesis One (1)

H_{01}: There is no significant difference in healthy weight outcomes between participants who integrate healthy eating habits into their daily routine and those who do not

	Observed N	**Expected N**	**E-O**	**$(E-O)^2$**	$\frac{(E-O)^2}{E}$
Strongly disagree	3	25.0	-22.0	484	19.36
Disagree	4	25.0	-21.0	441	17.64
Agree	49	25.0	24.0	576	23.04
Strongly agree	44	25.0	19.0	361	14.44
Total	**100**				**74.48**

Degree of freedom	% (percentage)	Table x^2	Calculated	Decision
3	5% (0.05)	9.488	74.48	Rejected

Source: Field Survey (2025) *SPSS 27*

According to the hypothesis test, the chi-square value obtained is 74.48, which is larger than the critical value of 9.488 at 3 degrees of freedom under the 5% significance level. Consequently, the null hypothesis is rejected, suggesting a real difference in healthy weight outcomes between participants practising healthy eating habits and those who do not. Therefore, promoting healthy eating seems to support weight control for people engaged in physical fitness activities.

Table Ten: Hypothesis Two (2)

H_{01}: There is no significant relationship between engaging in physical activities and achieving a healthy weight among participants.

	Observed N	**Expected N**	**E-O**	**$(E-O)^2$**	$\frac{(E-O)^2}{E}$
Strongly disagree	1	25.0	-24.0	576	23.04
Disagree	15	25.0	-10.0	100	4
Agree	45	25.0	20.0	400	16
Strongly agree	39	25.0	14.0	196	7.84
Total	**100**				**50.88**

Degree of freedom	% (percentage)	Table x^2	Calculated	Decision
3	5% (0.05)	9.488	50.88	Rejected

Source: Field Survey (2025) *SPSS 27*

The hypothesis test shows a calculated chi-square value of 50.88, which is greater than the critical value of 9.488 at 3 degrees of freedom and 5% significance level. Thus, the null hypothesis is rejected, indicating a significant relationship between engaging in physical activities and achieving a healthy weight among participants.

Table Eleven: Hypothesis Three (3)

H_{01}: The combination of balanced nutrition and regular physical activity does not have a significant impact on managing a healthy weight for individuals in fitness programs.

	Observed N	Expected N	E-O	(E-O)²	$\frac{(E-O)^2}{E}$
Strongly disagree	1	25.0	-24.0	576	23.04
Disagree	2	25.0	-23.0	529	21.16
Agree	34	25.0	9.0	81	3.24
Strongly agree	63	25.0	38.0	1444	57.76
Total	**100**				105.2

Degree of freedom	% (percentage)	Table x^2	Calculated	Decision
3	5% (0.05)	9.488	105.2	Rejected

Source: Field Survey (2025) *SPSS 27*

The hypothesis test shows a calculated chi-square value of 105.2, which is much higher than the critical value of 9.488 at 3 degrees of freedom and 5% significance level. Thus, the null hypothesis is rejected, indicating that the combination of balanced nutrition and regular physical activity significantly impacts healthy weight management among fitness participants.

Table Twelve: Hypothesis Four (4)

H_{01}: The frequency and timing of meals among physical fitness participants have no significant influence on their ability to maintain a healthy weight.

	Observed N	**Expected N**	**E-O**	**(E-O)²**	$\frac{(E-O)^2}{E}$
Strongly disagree	4	25.0	-21.0	441	17.64
Disagree	11	25.0	-14.0	196	7.84
Agree	22	25.0	-3.0	9	0.36
Strongly agree	63	25.0	38.0	1444	57.76
Total	**100**				83.60

Degree of freedom	% (percentage)	Table x^2	Calculated	Decision
4	5% (0.05)	9.488	83.60	Rejected

Source: Field Survey (2025) *SPSS 27*

The hypothesis test shows a calculated chi-square value of 83.60, which exceeds the critical value of 9.488 at 4 degrees of freedom and 5% significance level. Thus, the null hypothesis is rejected, indicating that meal frequency and timing significantly influence healthy weight maintenance among physical fitness participants.

Discussion of Findings

The findings of this study indicate an important effect of nutrition as well as physical activity on healthy weight control among physical fitness subjects. The responses from the participants showed strong agreement in the aspect that the practice of regular exercise and following good diet practices is quite helpful in the maintenance of ideal body weight. Such results are in line with the recent publications on the synergistic role

of diet and physical exercise in shaping body composition and long term-weight control (Chin et al., 2021; Fong et al., 2020).

The participants agreed that the consumption of balanced meals as well as the emphasis on nutrient dense food and the scheduling of meals around physical activity had all been beneficial to the weight goals. This concurs with the conclusions by Bleich et al. (2020), as they reported that structured meals and good nutrition correlate significantly with weight stability among individuals and better metabolic health. Moreover, the high consensus on the significance of combining both aerobics and strength provides support for the work of Piercy et al. (2019) where diverse spectra of physical exercise have been reported in contributing to the increase in body energy expenditures and weight regulation.

The hypothesis tests gave statistical evidence to support such perceptions. For example, the disproval of the first null hypothesis determined significant discrepancies in weight outcomes among the people, who have incorporated healthy eating regimens into their lifestyle, and the ones who do not. On equal note, the second and the third hypothesis proved that physical activity and integration of nutrition and exercise both play a very important role when it comes to managing weight. These findings confirm the previous results of Chao et al. (2022), as well as Mozaffarian et al. (2020), who stated that a prolonged persistence in the appropriate lifestyle patterns (both diet and physical activities) implies reliable weight control.

Additionally, the influence of meal timing and frequency was statistically significant, highlighting their critical role in supporting weight management goals. This aligns with the findings of Jakubowicz et al. (2019) and St-Onge et al. (2020), who documented that irregular meal patterns, especially late-night eating, disrupt circadian rhythms and impair metabolic efficiency, contributing to weight gain.

Collectively, these findings reinforce the need for a holistic approach that includes regular physical activity, balanced nutrition, and strategic meal timing in designing interventions for weight control. They also highlight the importance of educating fitness participants and the general public on lifestyle habits that promote long-term health and weight stability (WHO, 2022; CDC, 2021).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This study explored the influence of nutrition and physical activity on healthy weight management among physical fitness participants. Data were collected from 100 participants through structured questionnaires, which focused on their nutrition habits, exercise routines, and meal timing patterns. The findings revealed that both nutrition and physical activity play critical roles in maintaining a healthy weight. Participants agreed that a balanced diet and regular exercise significantly contribute to weight management. Furthermore, the study highlighted the importance of meal timing, frequency, and integrating both diet and physical activity for optimal weight control. The results from the statistical analysis indicated significant relationships between nutrition, physical activity, and healthy weight outcomes, leading to the rejection of all four null hypotheses.

Conclusion

The findings of this study underscore the importance of both proper nutrition and regular physical activity as essential components of healthy weight management. The significant relationship between these two factors suggests that they should not be considered in isolation but as part of an integrated approach to weight control. Participants in the study acknowledged that balanced eating, when combined with consistent physical exercise, is crucial for achieving and maintaining a healthy weight. Furthermore, the importance of meal timing and frequency, as well as meal planning around exercise routines, was

highlighted as a key factor in weight management success. The study also demonstrated that participants who adhered to these holistic practices experienced better control over their body weight and overall fitness.

This research reaffirms the need for fitness programs and health interventions to adopt a comprehensive approach that includes not only physical activity but also proper nutrition and behavioural practices. Programs that incorporate both elements, along with personalized guidance on meal planning and timing, can be more effective in promoting sustainable weight management.

Recommendations

Based on the results, the following recommendations are proposed:

1. **Holistic Fitness Programs:** Fitness centers and health organizations should develop and offer programs that integrate both nutrition and physical activity components. This approach would provide participants with a well-rounded strategy for achieving healthy weight management.

2. **Education and Awareness:** Public health initiatives should focus on educating the general population, especially physical fitness participants, about the importance of both balanced nutrition and regular physical activity. Tailored workshops and resources could help individuals understand how to integrate these practices into their daily routines.

3. **Personalized Nutritional Guidance:** Nutritionists, dietitians, and fitness professionals should collaborate to create individualized meal plans that align with fitness goals. This guidance should also address meal timing to ensure that nutrition supports physical activity and overall weight management.

4. **Community-Based Programs:** Local health organizations should organize community fitness programs that offer both exercise and nutritional counseling. These programs can create an inclusive and supportive environment for individuals seeking to improve their weight and health outcomes.

5. **Use of Digital Tools:** Encouraging the use of mobile applications and fitness trackers could help participants monitor their diet and physical activity. These tools can provide real-time feedback and insights, promoting greater accountability and consistency in maintaining healthy weight management habits.

Suggestions for Further Studies

Future research can build upon this study in several ways to deepen our understanding of the relationship between nutrition, physical activity, and weight management:

1. **Long-Term Impact Studies:** Future studies should examine the long-term effects of combined nutrition and physical activity interventions on maintaining healthy weight across different demographic groups, such as age, gender, and socio-economic status. This will help identify sustainable practices and barriers to adherence over time.

2. **Psychological and Behavioral Factors:** Exploring the psychological and motivational factors that influence participants' adherence to nutrition and exercise routines could provide valuable insights. Understanding the role of motivation, self-discipline, and perceived barriers could help in designing more effective interventions.

3. **Digital Health Tools:** Investigating the effectiveness of digital tools (such as mobile apps, wearables, and online fitness platforms) in supporting weight management could offer new strategies for integrating technology into fitness programs. These tools can provide personalized recommendations, track progress, and enhance user engagement.

4. **Cultural and Environmental Influences:** Further studies could explore how cultural, environmental, and regional factors affect nutrition and physical activity practices. Investigating how these factors influence eating habits, exercise preferences, and weight management could lead to more culturally relevant interventions tailored to specific populations.

Comparative Studies Across Fitness Levels: Future research could examine the impact of nutrition and physical activity on weight management among individuals at different fitness levels—ranging from beginners to advanced athletes. This would provide a more nuanced understanding of how fitness levels influence the effectiveness of combined diet and exercise interventions.

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APPENDICES

UNIVERSITY OF BENIN

FACULTY OF EDUCATION

DEPARTMENT OF HUMAN KINETICS AND SPORT SCIENCE

DEVELOPMENT

Dear Respondent,

The researcher is an undergraduate student of the Department of Human Kinetics and Sport Science, University of Benin with matriculation Number EDU2102445, conducting a study on The Influence of Nutrition and Physical Activity on Healthy Weight Management of Physical Fitness Participants.

This research is solely for academic purposes. Your participation is highly valued, and we kindly request your genuine and honest responses. All information provided will be treated with the utmost confidentiality and used strictly for research purposes.

Please take a few moments to answer the questions below. Your cooperation is greatly appreciated.

Thank you.

Dick Goodness Osomeoghena

[Researcher]

A QUESTIONNAIRE ON THE INFLUENCE OF NUTRITION AND PHYSICAL ACTIVITY ON HEALTHY WEIGHT MANAGEMENT OF PHYSICAL FITNESS PARTICIPANTS

Please tick the appropriate box bellow

SECTION A: (Demographics)

Age:

18-24 ( ) 25-34( ) 35-44 ( ) 45 and above ( )

Gender:

Male ( ) Female ( )

Academic Level:

O Level ( ) OND/NCE( ) B.Sc/HND ( ) Post Graduate ( )

Marital Status:

Single ( ) Married ( ) Divorced ( ) Widowed ( )

SECTION B:

Instruction: Below are statements about your knowledge on The Influence of Nutrition and Physical Activity on Healthy Weight Management of Physical Fitness Participants. Please indicate your level of agreement using: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

Research Question 1

S/N	**Influence of Nutrition on Healthy Weight Management**	SA	A	D	SD
1.	I believe that following a balanced diet significantly helps in managing my weight.				
2.	I plan my meals with nutritional content in mind to support my fitness goals.				

3.	Consuming nutrient-dense foods has a positive impact on my energy levels and weight management.				
4.	I find that healthy eating habits directly contribute to improved body composition.				

Research Question 2

S/N	**Influence of Physical Activity on Healthy Weight Management**	SA	A	D	SD
1.	Engaging in regular physical exercise helps me maintain a healthy weight.				
2.	I experience better weight management when I include both aerobic and strength exercises in my routine.				
3.	Physical activity increases my energy expenditure, which aids in weight loss.				
4.	I believe that a consistent exercise regimen is essential for effective weight control.				

Research Question 3

S/N	**Combined Impact of Nutrition and Physical Activity on Healthy Weight Management**	SA	A	D	SD
1.	Both nutrition and physical activity play equally important roles in managing my weight.				

2.	I feel that integrating healthy eating with regular exercise is critical for long-term weight management.				
3.	The combination of proper nutrition and regular physical activity has a strong impact on my overall fitness and weight.				
4.	I am confident that a holistic approach to diet and exercise is necessary for achieving and maintaining a healthy weight.				

Research Question 4

S/N	**Effect of frequency and timing of meals among physical fitness participants**	SA	A	D	SD
1.	Eating three or more regular meals daily helps me maintain a healthy weight.				
2.	Eating late at night (after 9:00 PM) negatively affects my weight management.				
3.	My meal timing is intentionally adjusted to support my fitness and weight goals.				
4.	I notice a positive difference in my body weight when I plan my meals around my physical activities.				

Demographic Data

Age				
	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	18-24	35	35.0	35.0	35.0
	25-34	47	47.0	47.0	82.0
	35-44	15	15.0	15.0	97.0
	45 and above	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	58	58.0	58.0	58.0
	Male	42	42.0	42.0	100.0
	Total	100	100.0	100.0	

Academic Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	B.Sc/HND	43	43.0	43.0	43.0
	O Level	9	9.0	9.0	52.0
	OND/NCE	24	24.0	24.0	76.0
	Post Graduate	24	24.0	24.0	100.0
	Total	100	100.0	100.0	

Marital Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Divorced	6	6.0	6.0	6.0
	Married	39	39.0	39.0	45.0
	Single	53	53.0	53.0	98.0
	Widowed	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

Descriptive Statistics			
	N	Mean	Std. Deviation

1. I believe that following a balanced diet significantly helps in managing my weight.	100	3.48	.674
2. I plan my meals with nutritional content in mind to support my fitness goals.	100	3.47	.627
3. Consuming nutrient-dense foods has a positive impact on my energy levels and weight management.	100	3.34	.699
4. I find that healthy eating habits directly contribute to improved body composition.	100	3.22	.733
5. Engaging in regular physical exercise helps me maintain a healthy weight.	100	3.48	.674
6 I experience better weight management when I include both aerobic and strength exercises in my routine.	100	3.46	.642
7. Physical activity increases my energy expenditure, which aids in weight loss.	100	3.43	.573
8. I believe that a consistent exercise regimen is essential for effective weight control.	100	3.22	.705
9. Both nutrition and physical activity play equally important roles in managing my weight.	100	3.59	.588
10. I feel that integrating healthy eating with regular exercise is critical for long-term weight management.	100	3.51	.522
11. The combination of proper nutrition and regular physical activity has a strong impact on my overall fitness and weight.	100	3.58	.516

12. I am confident that a holistic approach to diet and exercise is necessary for achieving and maintaining a healthy weight.	100	3.36	.482
13. Eating three or more regular meals daily helps me maintain a healthy weight.	100	3.44	.845
14.Eating late at night (after 9:00 PM) negatively affects my weight management.	100	3.51	.522
15. My meal timing is intentionally adjusted to support my fitness and weight goals.	100	3.58	.516
16. I notice a positive difference in my body weight when I plan my meals around my physical activities.	100	3.36	.482
Valid N (listwise)	100		

Hypothesis test

3. Consuming nutrient-dense foods has a positive impact on my energy levels and weight management.			
	Observed N	Expected N	Residual
Strongly disagree	3	25.0	-22.0
Disagree	4	25.0	-21.0
Agree	49	25.0	24.0
Strongly agree	44	25.0	19.0
Total	100		

Test Statistics	
	3. Consuming nutrient-dense foods has a positive impact on my energy levels and weight management.
Chi-Square	74.480[a]

df	3
Asymp. Sig.	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.	

4. I find that healthy eating habits directly contribute to improved body composition.			
	Observed N	Expected N	Residual
Strongly disagree	1	25.0	-24.0
Disagree	15	25.0	-10.0
Agree	45	25.0	20.0
Strongly agree	39	25.0	14.0
Total	100		

Test Statistics	
	4. I find that healthy eating habits directly contribute to improved body composition.
Chi-Square	50.880[a]
df	3
Asymp. Sig.	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.	

9. Both nutrition and physical activity play equally important roles in managing my weight.			
	Observed N	Expected N	Residual
Strongly disagree	1	25.0	-24.0
Disagree	2	25.0	-23.0
Agree	34	25.0	9.0
Strongly agree	63	25.0	38.0
Total	100		

Test Statistics	
	9. Both nutrition and physical activity play equally important roles in managing my weight.
Chi-Square	105.200[a]
df	3
Asymp. Sig.	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.	

13. Eating three or more regular meals daily helps me maintain a healthy weight.			
	Observed N	Expected N	Residual
Strongly disagree	4	25.0	-21.0
Disagree	11	25.0	-14.0
Agree	22	25.0	-3.0
Strongly agree	63	25.0	38.0
Total	100		

Test Statistics	
	13.Eating three or more regular meals daily helps me maintain a healthy weight.
Chi-Square	83.600[a]
df	3
Asymp. Sig.	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.	

Reliability Statistics

Case Processing Summary			
		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.977	16

Overall Agreement[a]						
		Asymptotic			Asymptotic 95% Confidence Interval	
	Kappa	Standard Error	z	Sig.	Lower Bound	Upper Bound
Overall Agreement	-.012	.002	-6.334	.000	-.016	-.009
a. Sample data contains 100 effective subjects and 16 raters.						