

Needs Assessment of the Types of Exercise for Elderly in Akwa Ibom State: The Contributions to their Better Health

Enobong Ubong Okoko ¹

Philomina Nsikan Senam ²

Esitime Peter Akpan ³

Abstract: The ever-emerging resistant microorganisms towards multiple antibiotics and many side effects induced by prevalent antibiotics encouraged the exploration of the antimicrobial agents derived from medicinal plants. This study appraises the in vitro antibacterial activity of essential oils extracted from *Ferula galbaniflua* Boiss. (Apiaceae) and *Ocimum canum* Sims (Lamiaceae) against two common food-borne *Bacillus cereus* and *Escherichia coli*. Essential oils were extracted via hydro-distillation using Clevenger's apparatus and tested using disc diffusion, and agar microdilution method according to CLSI guidelines. *F. galbaniflua* oil displayed a zone of inhibition (ZOI) of 32.50 ± 8.42 mm against *B. cereus* and 14.39 ± 2.24 mm against *E. coli*. *O. canum* oil induced inhibition of 15.56 ± 2.74 mm against *B. cereus* and 35.00 ± 5.83 mm against *E. coli* in terms of ZOI. MIC and MBC values further confirmed the efficacy of *F. galbaniflua* against *B. cereus* (MIC: 0.5 mg ml⁻¹, MBC: 1.0 mg ml⁻¹) and *O. canum* against *E. coli* (MIC: 0.25 mg ml⁻¹, MBC: 0.5 mg ml⁻¹). The values are comparable to gentamicin and kanamycin as reference antibiotics in specific cases as *F. galbaniflua* against *B. cereus*, while *O. canum* against *E. coli*. These findings suggest that these essential oils could serve as natural alternatives to combat food-borne infections, highlighting their potential in food preservation and therapeutic applications. Further studies on their chemical constituents and in vivo efficacy are recommended.

Keywords: Essential oils, Antibacterial activity, *Ferula galbaniflua*, *Ocimum canum*, *Bacillus cereus*, *Escherichia coli*, Food-borne pathogens

^{1,2,3} Department of Human Kinetics and Health Education, University of Uyo

Introduction

Ageing is a natural process associated with gradual changes in the physical, psychological and social functioning of individuals. As people grow older, they may experience reductions in muscle strength, flexibility, balance, endurance and general physical capacity. These changes can affect their ability to

perform routine activities independently and may increase their vulnerability to various health problems. Maintaining an active lifestyle is therefore important for supporting healthy ageing and preserving functional independence among elderly people[1][2]. Exercise is an important component of a healthy lifestyle and contributes to the maintenance of physical fitness and overall health. It involves planned, structured and repetitive physical activities performed to improve or maintain physical fitness and health[3]. Regular physical activity can improve cardiovascular function, strengthen muscles and bones, enhance physical fitness and reduce the risk of several chronic diseases[4][5]. These benefits make exercise particularly important for elderly people who need to maintain their physical capacity and independence as they age.

Exercise also contributes to the psychological and general well-being of older adults. Regular physical activity can improve mood, support cognitive functioning, reduce symptoms associated with anxiety and depression, and promote better sleep and psychological well-being[6][7]. In addition, maintaining physical activity can contribute to cardiovascular health and reduce health risks associated with physical inactivity[8][9]. However, failure to engage in regular exercise may have negative consequences for elderly people. Physical inactivity can contribute to loss of muscle strength, reduced mobility, poor balance and increased difficulty in carrying out routine activities. It may also increase dependence on family members or caregivers and negatively affect the quality of life of older adults[10]. Exercise programmes that include balance and functional activities can also help improve mobility and reduce the risk of falls among older adults[11].

Despite the benefits associated with physical activity, elderly people may face several challenges that limit their participation in exercise. These may include inadequate knowledge, limited social support, lack of accessible exercise facilities and uncertainty about the appropriate exercises for their physical abilities. Health education, family and social support, community-based exercise programmes, accessible facilities and professional guidance can therefore play important roles in promoting exercise among elderly people[12][13][14]. In AkwaIbom State, there is a need to identify and assess the types of exercise that are appropriate for elderly people and determine how such exercises contribute to their better health. Health practitioners can provide valuable information on appropriate physical activities and the health benefits associated with them. Therefore, this study focuses on the needs assessment of the types of exercise for elderly people in AkwaIbom State and their contributions to better health.

Statement of the problem

The elderly population requires regular and appropriate physical exercise to maintain physical fitness, functional independence and overall health. However, many elderly persons may not have adequate knowledge of the types of exercise that are suitable for their age, physical condition and health needs. Some elderly persons may also experience physical limitations, lack of access to exercise facilities, inadequate guidance and low motivation to engage in regular physical activities. These challenges may contribute to physical inactivity, reduced mobility and increased vulnerability to health problems among older adults. In AkwaIbom State, there is limited information on the specific exercise needs and suitable forms of exercise for the elderly population.

Therefore, there is a need to assess the types of exercise that are appropriate for elderly persons in AkwaIbom State and examine their contributions to better health. Understanding the exercise needs of the elderly can provide useful information for health practitioners, caregivers, families and other stakeholders in promoting safe and beneficial physical activities among older adults. The absence of adequate information in this area may limit efforts to develop effective exercise programmes that address the physical and health needs of elderly persons. This study therefore seeks to carry out a needs assessment of the types of exercise for elderly persons in AkwaIbom State and determine their contributions to better health.

Objectives of the Study

The study aims to:

1. Identify the types of exercise that promote better health among the elderly in Akwa Ibom State.
2. Examine the negative effects of not engaging in exercise among the elderly in Akwa Ibom State.
3. Identify the mechanisms for promoting exercise among the elderly in Akwa Ibom State.

Research Questions

1. What are the types of exercise that promote better health among the elderly in Akwa Ibom State?
2. What are the negative effects of not engaging in exercise among the elderly in Akwa Ibom State?
3. What are the mechanisms for promoting exercise among the elderly in Akwa Ibom State?

CONCEPTUAL FRAMEWORK

Concept of Exercise

Exercise refers to planned, structured and repetitive physical activities performed to improve or maintain physical fitness and overall health. It involves purposeful body movements that require the body to use energy and may include activities such as walking, jogging, swimming, cycling, dancing and stretching. Exercise is different from ordinary physical activity because it is usually performed with a specific purpose, such as improving strength, endurance, flexibility or cardiovascular fitness. It is therefore an important part of a healthy lifestyle and contributes to the general well-being of individuals.

Exercise can take different forms depending on the purpose and intensity of the activity. Aerobic exercises such as walking, jogging and cycling help to improve cardiovascular endurance, while muscle-strengthening exercises help to develop and maintain muscular strength. Flexibility exercises improve the movement of the joints, while balance exercises support stability and coordination. Regular participation in different forms of exercise can help individuals develop and maintain various components of physical fitness.

Regular exercise is important for maintaining cardiovascular health and reducing the risk of chronic diseases. It can improve heart function, blood circulation and physical fitness while contributing to the prevention and management of conditions such as cardiovascular disease, hypertension and diabetes. Regular physical activity has also been associated with better cardiometabolic health and other positive health outcomes.

Exercise also contributes to mental and psychological well-being. Regular participation in physical activity can help improve mood, reduce symptoms of anxiety and depression, support cognitive functioning and promote general psychological well-being. It can also contribute to better sleep and improved ability to perform everyday activities. Thus, exercise provides benefits that extend beyond physical fitness to include important aspects of mental health.

For adults, exercise should be performed regularly and at an appropriate intensity based on individual ability and health condition. Adults are encouraged to engage in 150–300 minutes of moderate-intensity aerobic physical activity per week, or an equivalent amount of vigorous-intensity activity, together with muscle-strengthening activities on at least two days per week. Regular exercise is therefore an important health-promoting behaviour that supports physical fitness, cardiovascular health and overall well-being.

Concept of Better Health

Better health refers to a condition in which an individual experiences good physical, mental and social well-being and is able to perform daily activities effectively. It involves more than simply being free from illness because it also includes having adequate energy, emotional stability and the ability to participate actively in everyday life. Better health is influenced by lifestyle practices such as regular exercise, balanced nutrition, adequate sleep, personal hygiene and appropriate healthcare practices. Maintaining these behaviours can help individuals improve their general well-being and quality of life[15].

Better health is also associated with the proper functioning of different body systems and the ability to carry out daily activities without unnecessary limitations. Individuals who maintain healthy lifestyles are more likely to develop good physical fitness and maintain their functional capacity. Healthy behaviours can also reduce exposure to several risk factors associated with chronic diseases. Therefore, maintaining better health requires continuous attention to lifestyle choices and behaviours that support normal body functioning.

Physical activity is an important factor in promoting better health because it contributes to the effective functioning of the cardiovascular, muscular and skeletal systems. Regular physical activity can improve physical fitness, strengthen muscles and bones, enhance cardiovascular function and reduce the risk of several chronic diseases. It can also improve an individual's ability to perform routine activities and maintain physical independence. Regular participation in physical activity is therefore an important component of a healthy lifestyle.

Better health also involves mental and emotional well-being. Individuals with good health are better able to manage everyday responsibilities, interact with others and participate in social and educational activities. Regular exercise and other healthy lifestyle practices can support psychological well-being, improve mood and reduce the effects of stress. Adequate sleep and positive social relationships may also contribute to improved mental well-being and overall quality of life.

In general, better health is a continuous process that involves maintaining healthy behaviours and making choices that support physical, mental and social well-being. Regular exercise, nutritious food, adequate rest, good hygiene and appropriate health practices can contribute to improved health outcomes. Thus, better health should be regarded as an important condition for effective participation in daily activities and the achievement of a productive and satisfying life.

Types of Exercise for Good Health

The following are major types of exercise that can contribute to good health when performed regularly and appropriately.

➤ Aerobic Exercise

Aerobic exercise refers to physical activities that involve continuous movement of large muscle groups and increase the heart rate and breathing. Common examples include brisk walking, jogging, swimming, cycling and dancing. Regular aerobic exercise helps the body use oxygen more efficiently, improves blood circulation and strengthens the heart and lungs. It can also improve endurance and make individuals more capable of performing daily activities without becoming easily tired. Bai, Soh[16] explained that aerobic exercise is useful for improving physical performance and maintaining functional fitness.

➤ Strength Training Exercise

Strength training involves exercises in which the muscles work against resistance to develop greater strength and endurance. Examples include lifting weights, using resistance bands, squats, lunges and push-ups. Regular strength training helps strengthen muscles, support healthy bones and improve physical functioning. It is also useful for maintaining muscle capacity as people grow older and can make routine activities such as carrying, lifting and climbing easier. Fragala, Cadore[17] emphasized that resistance training plays an important role in maintaining muscular strength and physical function.

➤ Flexibility Exercise

Flexibility exercise consists of movements that stretch the muscles and help joints move through their available range of motion. Examples include simple stretching exercises, yoga and other controlled mobility activities. Regular flexibility exercise can help reduce muscle tightness, maintain joint mobility and make everyday movements more comfortable. It is particularly useful when combined with other forms of physical activity because it supports overall movement and physical function. Behm, Chaouachi[18] noted that stretching activities can improve range of motion and support physical

movement.

➤ **Balance Exercise**

Balance exercise involves activities that train the body to maintain stability while standing, walking or changing positions. Examples include standing on one leg, heel-to-toe walking, controlled stepping and selected yoga movements. Good balance is important because it improves body control, coordination and stability during movement. Regular balance exercises can therefore support safe mobility and help individuals maintain independence in their daily activities. Sherrington, Fairhall[19] reported that balance and functional exercises can improve physical stability and mobility.

➤ **Endurance Exercise**

Endurance exercise involves physical activities performed for a sustained period to improve the body's ability to continue physical effort. Examples include brisk walking, jogging, swimming, cycling and hiking. Regular endurance exercise can increase stamina, improve cardiorespiratory fitness and help the body perform prolonged activities more efficiently. It also supports general health when performed regularly and at an appropriate intensity. Kraus, Powell[20] noted that regular physical activity contributes to better cardiovascular health and helps reduce health risks associated with physical inactivity.

Types of Exercise for Elderly Better Health

Regular physical activity is important for helping older adults maintain their strength, mobility and independence. Different exercises can support different aspects of healthy ageing, including heart function, muscle strength, coordination and flexibility. The following exercises can be incorporated into the routine of elderly people according to their individual abilities and physical condition.

➤ **Walking Exercise**

Walking is one of the simplest forms of physical activity for elderly people because it requires little equipment and can be performed indoors or outdoors. Regular walking can improve circulation, strengthen the lower-body muscles and support cardiovascular health. It can also help older adults remain active and independent in their daily activities. According to Murtagh, Nichols[21], regular walking and other moderate physical activities can contribute to improved health and physical functioning among older adults.

➤ **Water-Based Exercise**

Water-based exercise involves performing physical activities in a swimming pool or other suitable aquatic environment. Examples include water walking, gentle swimming and simple movements against water resistance. The support provided by water can reduce pressure on the joints while still allowing older adults to exercise their muscles and cardiovascular system. Pérez-Torres and others[22] observed that aquatic exercise can improve physical function and mobility among older adults.

➤ **Chair Exercise**

Chair exercises are physical movements performed while sitting on a stable chair or using the chair for support. They may include seated leg extensions, arm movements, gentle marching and controlled stretching. This form of exercise can be particularly useful for elderly people who have difficulty standing for long periods. Liu, Shiroyama[23] reported that chair-based exercise programmes can support physical function and mobility among older adults with limited physical capacity.

➤ **Stair-Climbing Exercise**

Stair climbing is a weight-bearing activity that engages the muscles of the legs and requires the body to work against gravity. Elderly people who are physically able can use a few steps or a low step platform for controlled stair-climbing exercises. It can help improve leg strength, cardiovascular fitness and

functional capacity.

➤ **Cycling Exercise**

Cycling is an activity that repeatedly works the muscles of the legs while providing cardiovascular exercise. Elderly people can use stationary bicycles when outdoor cycling is difficult or unsafe. Appropriate cycling can improve leg strength, endurance and cardiovascular fitness while allowing the intensity to be adjusted according to individual ability. Kujala, colleagues[24] reported that cycling-related physical activity is associated with beneficial effects on physical fitness and health among older adults.

Negative Effects of not Engaging in Exercise among the Elderly

Regular exercise is important for maintaining physical strength, mobility and independence among elderly people. When older adults do not engage in regular physical activity, their muscles, bones, heart and movement abilities may gradually become weaker. The following are five major negative effects of physical inactivity among elderly people.

➤ **Loss of Muscle Strength**

Not engaging in regular exercise can lead to a gradual reduction in muscle strength among elderly people. When muscles are not regularly used and challenged, they may become weaker, making activities such as walking, climbing stairs, lifting objects and getting up from a chair more difficult. Cruz-Jentoft and Sayer explained that the decline in muscle strength associated with ageing can negatively affect physical performance and the ability of older adults to carry out daily activities.

➤ **Reduced Mobility**

Physical inactivity can reduce the ability of elderly people to move freely and independently. Remaining inactive for long periods may contribute to reduced flexibility, muscle weakness and difficulty with ordinary movements. As mobility becomes poorer, older adults may require greater assistance with daily activities. Izquierdo, Merchant[25] emphasized that regular exercise is important for preserving mobility, functional capacity and independence during ageing.

➤ **Increased Risk of Falls**

Failure to engage in regular exercise may contribute to poor balance, weak leg muscles and reduced coordination among elderly people. These physical limitations can make it more difficult for an older person to maintain stability while walking or changing position. Sherrington, Fairhall reported that exercises involving balance and functional movements can help reduce the risk of falls among older adults.

➤ **Poor Cardiovascular Health**

Lack of exercise can reduce cardiovascular fitness and affect the efficient functioning of the heart and circulatory system. Elderly people who remain physically inactive may have lower endurance and may be more vulnerable to health problems associated with an inactive lifestyle. Lavie, Arena noted that maintaining physical fitness through regular activity is associated with better cardiovascular health and reduced health risks.

➤ **Reduced Ability to Perform Daily Activities**

Not engaging in exercise can gradually affect an elderly person's ability to perform routine activities such as bathing, dressing, shopping, cooking and moving around the home. Reduced strength, endurance and balance may increase dependence on family members or caregivers. Dent, Morley stressed that maintaining physical function and muscle health is important for preserving independence and quality of life among older adults.

Mechanisms for Promoting Exercise among the Elderly

Promoting exercise among elderly people requires approaches that make physical activity accessible, enjoyable and appropriate for their abilities. The following mechanisms can help encourage regular exercise among elderly people.

➤ Health Education and Awareness

Health education is an important mechanism for encouraging elderly people to participate in exercise. Older adults can be educated about the benefits of regular physical activity, including improved strength, mobility, cardiovascular health and independence. Health workers, community organizations and family members can provide simple information on safe exercises suitable for older adults. Cunningham, O'Sullivan emphasized that improving knowledge and awareness about physical activity can encourage healthier behaviours among older adults.

➤ Family and Social Support

Family and social support can motivate elderly people to participate in regular exercise. Relatives, friends and community members can encourage older adults to walk, stretch or participate in group physical activities. Exercising with others can also reduce feelings of isolation and make physical activity more enjoyable. Franco, colleagues[26] found that social support and group-based approaches can contribute to increased physical activity among older adults.

➤ Community-Based Exercise Programmes

Community-based exercise programmes provide older adults with convenient opportunities to participate in organized physical activities. Such programmes can be conducted in community centres, churches, recreational areas or other accessible locations. Activities may include walking groups, stretching, dancing and light strengthening exercises. Clegg, Logan noted that community-based physical activity programmes can support physical functioning and encourage active ageing.

➤ Accessible Exercise Facilities

Providing safe and accessible spaces for exercise can encourage elderly people to become more physically active. Exercise areas should have suitable walking paths, benches, adequate lighting, safe surfaces and equipment that can be used by older adults. Accessibility is particularly important for elderly people who have mobility limitations. Bauman, Bull emphasized that supportive physical environments can help create opportunities for people to participate in regular physical activity.

➤ Professional Guidance and Supervision

Professional guidance from physiotherapists, exercise specialists, nurses or other trained health professionals can help elderly people participate in exercise safely. Professionals can recommend appropriate activities based on an individual's physical abilities and health condition and can demonstrate correct exercise techniques. Izquierdo, Merchant stressed the importance of individualized exercise programmes in maintaining physical function and promoting healthy ageing among older adults.

METHODOLOGY

In carrying out the study, a need assessment survey research design was adopted. The study was carried out in Akwa Ibom State. The target population of the study comprised health practitioners in Akwa Ibom State. A stratified sampling technique was used to select 40 health practitioners from each of the three senatorial districts of Akwa Ibom State, namely Uyo, Eket, and Ikot Ekpene, giving a total sample size of 120 respondents for the study. The instrument used for data collection was a structured questionnaire entitled "Exercises for Good Health Questionnaire" (EGHQ). The face and content validity of the instrument were established by an expert in Physical and Health Education as well as Test, Measurement and Evaluation to ensure the accuracy, appropriateness, clarity and completeness of the items in relation to the objectives of the study. The reliability of the instrument was determined and a reliability coefficient

of 0.89 was obtained. This coefficient was considered sufficiently high to establish the reliability of the instrument for the study. The data generated from the study were subjected to appropriate statistical analysis. Percentage analysis was used answer the research questions.

RESULTS AND DISCUSSIONS

Research Question 1:

The research question sought to examine the types of exercise for elderly better health in Akwa Ibom State. To answer the research question, percentage analysis was performed on the data (see Table 1).

Table 1: Percentage analysis of the types of exercise for elderly better health in Akwa Ibom State.

Types of exercise for elderly better Health	Frequency	%
Walking Exercise	32	26.67**
Water-Based Exercise	27	22.50
Chair Exercise	23	19.17
Stair-Climbing Exercise	22	18.33
Cycling Exercise	16	13.33*
TOTAL	120	100

***The highest percentage frequency**

The least percentage frequency

SOURCE: Field survey

The table 1 presents the percentage analysis of the types of exercise for elderly better health in Akwa Ibom State. From the result of the data analysis, it was observed that the highest percentage (26.67%) was recorded for “Walking Exercise” while the least percentage (13.33%) was recorded for “Cycling Exercise”. The findings align with Liu, Shiroyama, who noted that chair-based exercise programmes can support physical function and mobility among older adults with limited physical capacity. Similarly, Kujala, colleagues explained that cycling-related physical activity is associated with beneficial effects on physical fitness and health among older adults.

Research Question 2:

The research question sought to examine the negative effects of not engaging in exercise among the elderly in Akwa Ibom State. To answer the research question, percentage analysis was performed on the data (see Table 2).

Table 2: Percentage analysis of the negative effects of not engaging in exercise among the elderly in Akwa Ibom State.

Negative effects of not engaging in exercise among the elderly in Akwa Ibom State	Frequency	%
Loss of Muscle Strength	26	21.67
Reduced Mobility	29	24.17**
Increased Risk of Falls	21	17.50
Poor Cardiovascular Health	24	20.00
Reduced Ability to Perform Daily Activities	20	16.67*
TOTAL	120	100

****The highest percentage frequency**

***The least percentage frequency**

SOURCE: Field survey

The table 2 presents the percentage analysis of the negative effects of not engaging in exercise among the elderly in Akwa Ibom State. From the result of the data analysis, it was observed that the highest percentage (24.17%) was recorded for “Reduced Mobility”. While the least percentage (16.67%) was

recorded for “Reduced Ability to Perform Daily Activities”. The findings aligns with Dent, Morley stressed that Not engaging in exercise can gradually affect an elderly person's ability to perform routine activities such as bathing, dressing, shopping, cooking and moving around the home. Reduced strength, endurance and balance may increase dependence on family members or caregivers. Similarly, Smith, Fairhall, observed that exercises involving balance and functional movements can help reduce the risk of falls among older adults.

Research Question 3:

The research question sought to examine the mechanisms for promoting exercise among the elderly in Akwa Ibom State. To answer the research question, percentage analysis was performed on the data (see Table 3).

Table 3: Percentage analysis of the mechanisms for promoting exercise among the elderly in Akwa Ibom State

Mechanisms for Promoting Exercise among The Elderly	Frequency	%
Health Education and Awareness	30	25.00**
Family and Social Support	27	22.50
Community-Based Exercise Programmes	25	20.83
Accessible Exercise Facilities	21	17.50
Professional Guidance and Supervision	17	14.17*
TOTAL	120	100

****The highest percentage frequency**

***The least percentage frequency**

SOURCE: Field survey

The table 3 presents the percentage analysis of the Mechanisms for Promoting Exercise among the Elderly in Akwa Ibom State. From the result of the data analysis, it was observed that the highest percentage (25.00%) was recorded for “Health Education and Awareness” while the least percentage (14.17%) was recorded for “Professional Guidance and Supervision”. The findings is in support with Clegg, Logan, who noted that community-based physical activity programmes can support physical functioning and encourage active ageing. Similarly, Franco and colleagues found that social support and group-based approaches can contribute to increased physical activity among older adults. Family and social support can motivate elderly people to participate in regular exercise. Relatives, friends and community members can encourage older adults to walk, stretch or participate in group physical activities. Exercising with others can also reduce feelings of isolation and make physical activity more enjoyable.

Conclusion and Recommendations

In conclusion, the study considered the negative effects of not engaging in exercise and the mechanisms for promoting exercise among the elderly. Regular participation in appropriate physical activities can help elderly individuals maintain physical functioning, improve mobility, support cardiovascular health, and enhance their general well-being. On the other hand, lack of physical activity may increase the risk of reduced mobility, weakness, poor physical functioning, and other health challenges associated with ageing. Therefore, promoting suitable and regular exercise among the elderly is important for supporting healthier and more active ageing in Akwa Ibom State. Based on the findings of the study, the following recommendations are made: Elderly individuals should be encouraged to engage in suitable exercises such as walking, stretching, balance exercises, and other moderate physical activities according to their abilities. Health practitioners should provide appropriate exercise guidance to elderly persons and help them select activities that are safe and suitable for their age and physical condition. Exercise awareness

programmes should be organized for the elderly through health centres, community groups, churches, and other community-based organizations to educate them on the importance of regular physical activity.

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