PHYSICAL ACTIVITY DURING FORCED COMMUNAL LOCKDOWN: AN ANTIDOTE TO ONSET OF DEGENERATIVE HEALTH IN A PANDEMIC

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ABSTRACT

Physical activity as a primordial aspect of human existence is essential for survival. This article is advocating concerted physical exercise for persons who are healthy and active under pandemic occasioned communal lockdowns. The importance of engaging in physical exercise for a good immune system as asserted by other authors is the impression of this article. The aim is to highlight the importance of maintaining an active lifestyle in the midst of forced communal lockdown occasioned by disease pandemic. The relationship between concerted physical activity and a healthy immune system is reiterated for therapeutic and prophylaxis purposes during the disease scourge. For persons who would adopt an exercise programme to maintain a healthy body preparatory to resumption to work post pandemic, the nature and principles of physical activity is highlighted, for a knowledge in the practice of regular physical exercise. The different categories of physical activities are established in the article, in order to make it easy for persons to decide which activity is convenient for adoption. A regulated exercise regime of 3 alternate days of the week, 2 sessions per day, and a minimum of 45 minutes per session is recommended for all exercise enthusiasts. The latest pandemic, the Covid-19 and the resultant lockdown is reviewed in the article, and the effect on family living, work practice, and elite sports practice is equally reviewed. A very active lifestyle is recommended during normalcy, pandemic, and post pandemic.

Key words: Active Lifestyle, Pandemic, Lock down, Immune System, Physical Conditioning, Obesity, Anthropology, Morphology.

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Introduction

The human morphology is pro activity, and rest inclusive. There are two extreme ends of human activity, the more active end is waking up to action and the closing end of desisting from hyperactivity is rest and sleep. The human body is fashioned for action through diverse forms of movement every single day of active living. Inability to move leads to a degeneration of the human body apparatus and the beginning of debilitative health conditions simply classified as hypokinetic diseases. A ready example of a hypokinetic disease is obesity. Obesity and immunity are two contending human attributes. Obesity reduces the body's capacity to fence off diseases in the human body. However, a regulated and conscious regimen of physical activity prevents obesity and improves human wellness and general well-being. An active life promotes a strong immune system; while on the other hand, a sedentary life style exacerbates a weak immune system.

Human immunity is a subject of concern since the announcement of the COVID-19 pandemic and the necessitated "lockdown". The human immune system is the disease fighting mechanism of the human body, and wholesome physical activity supports this body's defense mechanism. The onset of the pandemic has necessitated reduced physical activity. Many people are less active than they could have been under a normal situation, this

demands adaptation and creation of alternative activities, which would demand as much energy that the usual daily entrepreneurial and bureaucratic processes would afford. Higher levels of professional sporting activities also are at stand still or temporarily suspended, and high-level activity elite athletes had to device means by which they could sustain high level of competition readiness at home. According to Arnett, *et al.* (2008), high level of energy reserve is a requirement for routine physical tasks demanding low, moderate or high levels of physical activity.

A consistent practice of programmed physical exercises keeps the body's immune system in optimum condition. Regular moderate intensity exercise is said to be beneficial to the immune system, (Simpson *et al*. (2015). According to Simpson *et al* (2015), in contrast to prolonged bouts of exercise in elite sports training, single bouts of moderate intensity exercise are "immune enhancing" and have been used to effectively increase vaccine responses in "at risk" patients. Lowered immunity or a poor immune system compromises the human body and cause an onset of diverse forms of corporeal diseases. The authors claimed that the improvement in immunity due to regular exercise of moderate intensity may be due to reductions in inflammation, maintenance of thymic mass, alterations in the composition of "older" and "younger" immune cells, enhanced immuno surveillance, and / or amelioration of psychological stress. They concluded in their study that exercise is a powerful behavioural intervention that has the potential to improve immune and health outcomes in the elderly, the obese, and patients living with cancer and chronic viral infections such as HIV, and possibly COVID-19. The onslaught of immune deficiency diseases institutes conditions such as fatigue, and general weakness of the physiological systems and their proneness to a collapsed system, and fatality in extreme conditions (CDC 2020).

There may not be a clear and direct established relationship between physical activity and the human immune system. However, it is a proven fact that consistent practice of physical activity and an active lifestyle promotes health and human wellness. A top-notch immune system also promotes wellness. Therefore, there has to be an indirect relationship between Physical Activity and Immunity. It is a consensus that "Exercise is Medicine".

THE NATURE OF PHYSICAL ACTIVITY

Physical activity is as old as Man is. We see this in the study of anthropology. Activity is essential for human survival and subsistence. Archaeological and anthropology studies have opined that the primates from which the Homosapiens evolved based on studies in evolution have bodies formed for survival and swift escapes. Therefore, survival is key to man and is dependent on his ability to move away from threatening environments to less threatening vicinities, hence the necessity for migration occasioned by nature, natural events, seasons, and disease pandemic inclusive.

Human movement requires elements of physical capabilities and ability to transit. This is evident in the Stimulus-Response theory both at cellular and organismic levels. The nature of physical activity informs that movement is pertinent for overall human wellness. According to Oduyale (2018), the seven dimensions of Human Wellness are achievable through planned physical activities. These are social, emotional, spiritual, intellectual, environmental, occupational, and physical dimensions. It is important that Man should make purposeful movements to achieve life purposes. Human movement therefore, movement must be effective and efficient during physical activities in order to achieve life aims and objectives. Any movement that serves a contrary purpose is wasteful.

PHYSICAL ACTIVITY AND LOCKDOWNS

A lockdown informs limited human movements. During pandemic occasioned lockdowns, human activity has to be controlled, in order to minimise the prospect of making contact with the causal pathogenic agent, and the index person. The agent may be a disease causing pathogen, or an occasion of civil strife or war. It could also be the result of a disease pandemic as we have it at this pandemic of COVID-19. When demands are made upon man causing limited movement, it has negative implications on human health it becomes imperative by the nature of man to find alternatives to the programmed routine activities pre pandemic

in order to maintain optimum health. Jacobson *et al*. (2020) stated that an application of a mandatory quarantine of people within their homes without practice of any form of physical activity may inadvertently increase sedentary lifestyle, decrease general physical activity, and eventually increased underlying health consequences. This according to them may cause lowered physical fitness and energy plus. Hence the need to to prescribe essential physical activity to all persons during the COVID-19 pandemic lockdown. Pinto *et al*. (2020) also subscribed to the view of Jacobson *et al*. (2020).

The following conditions are usually the result of reduced or lowered levels of physical activity to outright inactivity. Increased body weight, reduced bone density and proneness to fracture, stiffness at the bone joints, proneness to muscle pulls, muscular flaccidity, reduced muscle elasticity and extensibility. Other morbid conditions include chronic anxiety syndromes, panic attack, depression, insomnia, lethargy, reduced immunity, poor bowel activity, and slowed metabolic activities. Edema is also a common feature especially for persons with compromised cardiovascular and excretory (urinary) systems. Maintaining an idle sitting position for long periods definitely would cause poor circulation of body fluids and thereby result to stasis and fluid retention at the extremities of the upper and lower limbs. Other vital organs besides varieties of body tissues, which may experience fluid retention in are the heart and the lungs.

Concerted physical activity at this time definitely is the antidote for the above listed conditions exacerbated by total and elongated lockdowns.

THE PRINCIPLES OF BODY CONDITIONING

The first step to commencing an exercise regimen is to consult with your personal physician and a credible exercise expert who must be an exercise physiologist, physical therapist, exercise prescriptionist or physical trainer. Often times many embark upon exercise regiments without getting a clearance concerning their health status. This approach is not advisable especially for persons with established underlining disease conditions such as Diabetes, Hypertension, Respiratory conditions such as asthma, undue hypoxia. The expert will be able to advice the enthusiast about which exercise mode is most appropriate for specific situations and conditions.

In pandemic, social distancing may not afford close associations or contacts, however, there are several assistive conditioning devices, which can facilitate all the processes required in the successful performance of exercises in the home.

Professionally, the expert supervisor must derive the basal values of certain vital health variables. These are blood pressure, heart rate, blood cell counts, respiratory frequency etc. the maximum possible values of the heart rate must also be calculated and established to avoid exercise overload by individuals.

The established formula for deriving the range of maximum heart rate in individuals is as shown below.

Maximum Heart Rate = 220 – AGE ± 10 in Beats per Minute (bpm) Sorenson (1979), Oduyale (2018).

A 60-year-old would have the range of maximum heart rate derived thus;

220 – 60 = 160 ± 10

I60 - 10 = 150 bpm… lower limit of maximum.

160 + 10 = 170 bpm… Upper limit of maximum.

Therefore, range of Maximum heart rate for a 60-year-old during exercise is 150 – 170 bpm. The moment the exercise elicits a heart rate range of 150 – 170 bpm, to avoid cardiovascular accident the activity ends. For a regulated exercise programme, 3 alternate days of the week is advised, 2 sessions per day, and a minimum of 45 minutes per session is recommended, (Oduyale, 2018).

CATEGORIES OF PHYSICAL ACTIVITIES

Physical activities for convenience and ease of comprehension is categorised into the listed four classes. Classification may slightly differ in other literature. However, the activities will be the same as described here.

1. Recreational and Outdoor Activities.
2. Physical Conditioning Activities.
3. Leisure Activities.
4. Psychomotor Activities. (Mental exercise

by physical activity. For brain function).

The main object of living an active lifestyle is to burn calories, facilitate a good metabolic process and manufacture enough energy with reserve to cope with daily essential physical processes. The daily domestic chores we perform by routine, may not guaranty the above, which informs the need for regulated and supervised exercise for every active and healthy persons.

Recreational and Outdoor Activities

These are categories of activities performed to rejuvenate life, and give us a sense of wellbeing on regular basis. The exercises involved do not place much demand on the energy systems of the human body, therefore they can be performed and sustained for an extended period without unnecessarily becoming overtly exhausted or fatigued. However, localized fatigue may occur in the part of the body most engaged in the performance of such activities. However, that part of the body that experiences local fatigue at performing a recreational activity gets the most health benefits accruable from the activity. Outdoor activities often are recreational in nature, especially because such activities are Nature Friendly, and as such help to "recreate" the infirmed body. Outdoor activities are highly recommended for the infirmed and the older adults especially. The reason being that such persons will need plenty of air and sunshine to aid the internal energy production systems towards gaining energy balance.

Outdoor recreational activities include, hiking, mountaineering, hill climbing, gardening, trail blazing, recreational golf, subsistence farming, neighbourhood cycling, trekking, social dancing. The list is endless and includes other exercises and activities similar in nature to the few listed here. Personal health status of the user, may determine the most appropriate activity for a person. Figures 1a and 1b, Figure 2.

Figure 1a: Beach Coast Walk.

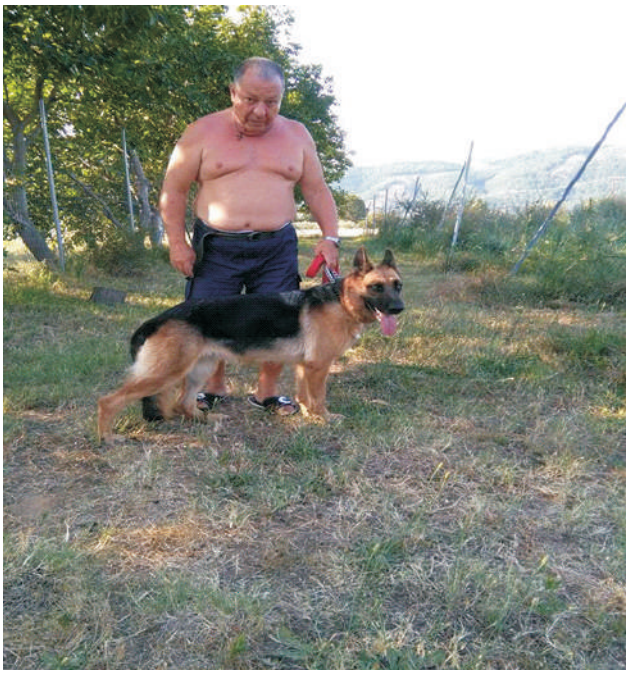

Figure 1b: Neighbourhood Dog Walking.

Figure 1: Forms of Recreational Outdoor Activities

Physical Conditioning Activities.

These categories of activities are specific in nature. They may be useful to persons who noticed weakness in specific parts of the body, and may need rehabilitation through exercise. However, "conditioning" may also imply total body tuning and the entire body is the focus rather than specific regions of the body. That is specific conditioning versus general conditioning, or a combination of the two.

Persons who suffer debilitating disease conditions may employ both general and specific conditioning activities. If for a person suffers mild stroke and becomes paraplegic or hemiplegic, general conditioning is recommended to tune the entire body especially the cardiorespiratory and musculoskeletal systems, also at the same time specific regions such as the limbs would need special attention for tuning to reclaim tonicity. For these activities, we have passive, active, assistive, and resistive conditioning activities.

Figure 1: A Cardio (Aerobics) Exercise Class for General Body Conditioning.

The Figure 3, shows an outdoor group performance class. This may be necessary to encourage some socialization despite pandemic. As much as the World health Organization and National Health Control institutions may discourage this practice, thorough supervision by an expert is necessary. Social distancing and other laid down regulations in terms of approved number of participants for gatherings must be observed. All health protocols in terms of zero body contact and use of alcohol based hand sanitizers must be strictly adhered to. There must be enough water and liquid soap for hand washing only.

Passive Conditioning Activities

Solely the person performs passive exercises. They do not require assistance from devices, or other persons to act as assistant or give support. They are lowly performed forms of Active conditioning exercises. They are not vigorous and do not demand much energy expenditure. They are low intensity exercises. Examples include performing stretches as in Figure 3 above, the body mass often serves as the weight required to overcome during passive conditioning exercises. Non-Impact Aerobics are passive conditioning exercises (See Figure 4), because they involve taking lunges, curling-up on the floor, and performing stretches while both feet maintain contact with the floor during the entire exercise stimulus period.

Figure 1: A Passive Conditioning Exercise in the Home.

Active Conditioning Activities

Active conditioning exercises are high intensity activities. As actively involved the performer might be, he has only his body weight to contend with during the entire exercise stimulus period. The performer with intent must attempt to displace his own body weight, which serves the purpose of resistance. Examples are performing the push – ups, squats, and step-ups. See figure 5 below for the sequence of performing the step-ups.

Figure 1: Active Conditioning Exercise (STEP-UPS) by Author during Covid-19 lockdown.

Assistive Conditioning Activities

This involves movements obtained through the assistance of devices or machines, other persons during pairing performances. The performer does every activity with the assistance of ergometers manufactured to induce workload and elicit desired physiological responses in the performer. Ergometers include the treadmill, bicycle ergometer, the rower, and the multi station gym. These devices are either manual, or electrically operated.

Figure : Assistive Conditioning Devices (Ergometers) the Stationary Bicycle and Tread Mill.

Figure : Assistive Conditioning Exercise (Pull-Ups) on the Multi Gym.

Resistive Conditioning Activities

The use of different forms of load bearing devices are encouraged for these activities. The use of weight training devices features prominently in these forms of activities, to condition the various skeletal muscles. The load bearing devices include the dumbbells Fig 8a, barbells, and the multiple station gym Fig 8b. Persons who are experiencing undue muscular weakness and tone leading to flaccidity as occasioned by stroke or other forms of trauma and musculoskeletal diseases are encouraged to use lighter weights to condition the muscles.

Figure 1a: A set of Dumbbells.

Figure 8b: The Multi ple Station Gym.

Leisure Activities

These are age long "spare time" activities requiring relaxed atmosphere, they are devoid of competition in any form. The main purpose is a rejuvenation of the entire body, especially they are mind entreating exercises. Many leisure exercises are useful for relaxation therapy. They take the mind off work for a certain allotted time and help to relieve stress. Often times leisure and recreation are interchangeably used, but leisure activities are

subsumed under recreation, except that leisure activities are not necessarily intense in nature, rather they are performed at will and are time bound, hence the use of the phrase "my leisure time", "my leisure time activity". Pleasure is a derivative of leisure exercise.

Leisure activities may include lounging, book reading, stargazing, picnic, fishing, park retreat, backstreet strolling and a few domestic activities such as gardening. Leisure activities gives a feeling of wellbeing, self-satisfaction, self-worth, and purposeful living. Leisure time is a time for retrospect and review of events of the past days or weeks. A time to slow down, thus fulfilling the last letter S in the acronym STRES(S). The target usually is to regain mental balance and cognitive acuity. It requires near zero effort, and it is paramount during lockdown.

Figure 1: A combination of Leisure and Psychomotor Activities to choose from during lockdown.

Psychomotor Activities.

These are activities directed at maintaining the psychomotor domain in persons desiring such attribute. They are physical in nature, and at the same time keeps the performer in an exhilarative state of mind in readiness for mental tasks, which demand higher levels of reasoning. For instance, white-water rafting, a water recreational exercise, is described as an especially exhilarative adventure.

It is thus important to find adventure in an adopted psychomotor activity, towards the expected goal. Adventure within the immediate vicinity is important during lockdowns, and as much as the lockdown is relaxed and can afford movements a few kilometers away from home, it is good to seize the opportunity to embark on a few physically challenging activities next to nature. It helps to elevate the mind above the fear invoked by the pandemic, and gives the necessary daring set of mind required to survive the situation. Psychomotor activities include; Water rafting, Solo or Duo canoeing, Forest Hiking, Bush camping, Hill climbing/camping, Lowly organized games maximum of 2 aside, beach volleyball, beach soccer Figs 9 & 10, bowling, mountain biking Fig 14, manual harvesting on farms, hunting expedition, setting traps and picking games from traps Fig 11.

Figure10a: Sea Faring with Dolphin.

Figure 11: Beach Coastline Hiking

Figure 12: Game Hunting

Hitch hiking to the hill top and feeling on top of the world.

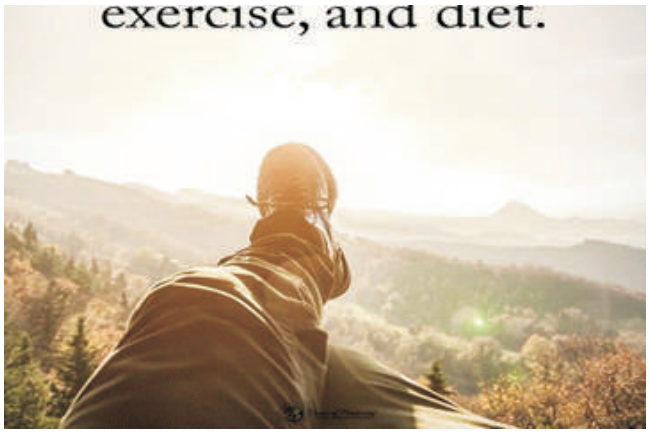

Figure 14: Mountain Top Lounging and Meditation.

Figure 15:Hill Biking. ***Source: Mr. Henry Pufaa***

The figure 14, is a colleague physical educator and staff of the University of Education Winneba Ghana during the COVID-19 lockdown who recreated by embarking on hill biking expedition.

THE COVID – 19 EXPERIENCE

On the domestic front, the public health advisory to Nigerians on Corona Virus disease on July 1, 2020, reiterated her restrictions on sporting activities and many other public activities/movements, (NCDC 2020). Globally, the World Health Organization WHO counselled that all persons should stay safe

by staying at home especially during the early days of the pandemic. This implied that families were expected to stay within the four walls of their properties either entirely keep indoor or at most use the much of garden space available, visitations by friends and extended family members were discouraged. Self-isolation is a recommendation for persons who are showing symptoms of the virus both at home, and in designated isolation centers for established cases of infection. Yet, physical exercise was highly recommended as one of the essential measures for both prophylaxis and curative procedures of the disease pandemic.

It is important that persons who are healthy should remain active and avoid sedentary living. Also in a situation where the active working population are encouraged to work from home, which may inform sitting at the computers for several hours, then therefore has to be a means by which high level of activity is maintained through developing a compulsory regimen of physical activities. Many resolved to home exercises which some hitherto are not familiar with, and in the absence of a home coach, the internet became a useful tool from which exercise experts could be linked up with on regular exercise classes especially for the pandemic. Regular physical exercise programmes on the television tube also became highly subscribed to by families on cable television. These are very easy to follow. Home based physical activities became an essential tool to maintain physical fitness.

Series of activities easy to perform became regular exercises in the home, from squats, to running up the staircase, and family calisthenics sessions to keep the body fit. (Hammami, Harrabi, Mohr and Krustrup 2020).

Figure 16: Professional Athletes Exercise in Lockdown.
Source: Google pictures.

COVID – 19 PANDEMIC LOCK DOWN AND PROFESSIONAL SPORTS PRACTICE

It is noteworthy that International Sport Federations complied with the World Health Organization regulations directives for a total lock down. World Sporting Organizations like FIFA, IAAF, FIBA, FIVA, and IOC suspended Association activities. All elite athletes in various sports devised various forms of home conditioning activities within their premises. This action is necessary to help them maintain optimum fitness level when eventually Sports Association competitions and global sports would resume. Many elite athletes employed the conditioning activities, highlighted in this work during the lock down

CONCLUSION AND RECOMMENDATIONS

In conclusion, regular physical exercise plays a vital role in keeping the immune system strong during lockdown occasioned pandemic. Based on the principles for physical exercise practice, recommendation is made thus, that persons, who wish to maintain optimum health from physical exercise, should do so 3 times a week, twice daily and 45 minutes per session.

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