

## The Role of Physical Activity in the Prevention and Treatment of Mental Health Problems

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### Abstract

Physical activity is an important public health tool used in the treatment and prevention of diseases and improving individual's quality of life even among the psychiatric populations. Mental disorder is a public health concern due to poor lifestyle of the victims within the society. There seems to be an increase in obesity and cardiovascular related problems within the mentally ill population. In many settings, the mentally ill are considered as outcast and a burden to family members or society; thereby denying them participation in variety of movement patterns that are useful to their condition. It has been claimed that physical activity has positive effect on health in both clinical and non-clinical populations. This paper reviewed articles that provide relationship between physical activity and mental health specifically, the mild forms (depression, anxiety, quality of life, and self-esteem). The paper concludes that for physical activity to be a successful adjunct in the prevention and treatment of mental health problems, professional intervention of exercise scientists, exercise psychologists and counselors are needed. The paper therefore recommends the inclusion of such professionals in handling the mentally ill in both clinical and non-clinical settings.

**Keywords:** Physical Activity, Prevention, Treatment, Mental Health, Mental Disorder.

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### INTRODUCTION

Mind and body are just like two sides of a coin where each half depends on the other. The mind exists within the body and the state of the body is often determined by the state of the mind. Likewise, physical activity and health cannot be separated. Today, across the globe, physical activity has become an important public health phenomenal used in the treatment and prevention of various diseases including some psychiatric problems. Physical activity might be an effective measure for the prevention and treatment of psychiatric diseases like depression and anxiety disorders as in the case of non-psychiatric diseases. Individual's quality of life is being improved though recommended physical activity (Peluso, Halen, Guessa & Androdes, 2005).

The physical health of people living with mental illness is increasingly deteriorating with evidences in obesity, metabolic diseases and risk of cardiovascular diseases (Janny, Richardson, Holleman, Glasheen, Strath & Conroy, 2008).

Crone, Smith and Gough (2005) reviewed the relationship between organized recreational activity and mental health and reported that people who participated in sport clubs and organized recreational activity enjoy better mental health, are more alert and more resilient against the stressors of modern life. Physical activity and exercise has the strong potentials of

alleviating some symptoms of mild to moderate depression, and spending for alcoholism and substance abuse programmes; improve self-image; social skills and cognitive functions and reduce the symptoms of anxiety (Taylor, Sallies & Needles 1995). Based on the numerous beneficial effects of physical activity and exercise for the prevention and treatment of different types of diseases such as heart diseases, hypertension, non-insulin diabetes mellitus and osteoporosis, it has been recommended for the general populace (ACSM, 1998).

To facilitate the positive relationship between physical activity and exercises, the medical care centers, professionals should not see and treat the ailments of the mind and the body as separate entities. As a result of non-team approach and inability to use combine therapy (exercise and conventional medication) the mind are often left to psychologist and psychiatrist whereas the body is left to other medical and paramedical professionals (Smith, 2006). There exists an evidence of negative psychological effect of exercise (over training) as such cautions should be taken when recommending, designing and conducting an exercise programme for the mentally ill populations, In such situations physical activity counseling is important. Family and institutional physicians are in a position to provide physical activity counseling to people including the mentally ill. The counseling service should be augmented and follow up to ensure compliance and effectiveness (Beaulac & Carlson, 2011)

### **Rationale for the Review**

There exist vast evidences of the role of physical activity in the prevention, treatment and even promotion of mental health problems. As with normal population, the physical body of the mentally ill can equally respond to exercises and adopt to bring out positive health changes and improve the quality of Life of the mentally ill. Today there is an increase in the prevalence of obesity and risk of cardiovascular diseases among individuals with mental illness especially serious mental illness (SMI) as a result of inactivity (Allison, Newcorner, Dunn, Blumenthal, Fabricatore & Danmit, 2009; Jenny et al., 2008). An increase in physical activity for the mentally ill population may reduce premature morbidity and mortality and serve as anti-depressant to counter many forms of mental health problems (kirsch, Decon, Huedo-Medina, Scoboria, Moore & Johnson 2008; Mead, Morly, Campbell, Grieg, Memurdo & Lawlor, 2009).

Based on the increasing volume of literature on the role of physical activity on mental health, the rationale of this review stems up from bridging a gap that exist between these researches and the actual practice of the physical activity programmes to the mentally ill populations. Specifically, the following questions need to be considered in using physical activity to treat mental health problems:

- Are the provisions for physical activity programmes and facilities and equipments available in our mental health institutions
- How can mental health service users be exposed to physical activity
- How can coordinated movement patterns of the mentally ill be delivered to treat mentally health problems
- Who should support and promote the mentally ill to be physically fits?
- Are the health professionals adequately trained in physical activity and exposed to research evidence during training?

As Faulkner and Biddle (2001) reported, “many health professionals and other practitioners may believe physical activity is important for enhancing mental health, it may rarely feature in their professional activities.

### **Objectives of the review**

The under listed are the objectives of the study:

- To reaffirm the role of physical activity as an adjunct in prevention and treatment of mental health problems.
- To review existing literature on the effectiveness of exercises in the management of mental health predisposing factors.
- To explore professional services in using physical activity in the management of mental health problems

### **Physical activity and mood**

Individuals mood is a good indicator of one’s state of mental health, the healthier the mood, the better the state of the mental health and vice-versa. In most cases mood are expressed in depression and anxiety (Peluso et al., 2005).

### **PREVENTIVE MECHANISM**

Physical activity of a regular nature is reported to bring benefits to individuals with depressive and anxiety symptoms (Morgan, 1985; Martisen, 1994; Dimeo, Bauer, Varahram, Proest & Holter, 2001; Leppamaki, Partomen, Hurne, Haukka & Lennquist, 2002). As with the nature of research, there is no universal position regarding the relationship between physical activity and mood. Some studies (SLaven & Lee, 1997; Sexton, Sogaard & Olstrad, 2001) has shown that individual without psychiatric symptoms experience better mood through regular exercise and stand a preventive chance from mental health than those who do not. Though exercise intensity (moderate-long term) has not been consistent in improving mood within the normal people (Kritz-Silvestein, Bannet-Cornor & Corbaeu, 2001; Engel, Currie, Luck & Wirth 2002). There are other studies reporting improvement on personality profile such as satisfaction with physical appearance, self-esteem, vitality and general wellbeing (Poluska, 2001; Sonstream & Morgan, 1985; Salmon, 2001). With these observed effects of physical activity, an individual’s mental health would be improved and also be prevented from problems associated with it.

Studies have also shown that regular physical activity protect against the development of depression (Pate, Pratt, Blair, Haskell, Macera, & Bouchand, 1995; Martinsen 1994; Farmer, Locke, Moscicki, Denaneriberg, Larson & RadLoff, 1988), through the possible proactive evidence has not been demonstrated (Paluska & Schwenk, 2000). The effect of regular physical activities•on mood have been reported using aerobic form of exercises (Brosse, Sheets, Lett & Blumenthal, 2002) and also anaerobic form of exercises like weight and flexibility exercises can also reduce depressive symptoms. However with regard to anxiety, anaerobic exercise is as effective as aerobic in improving mood (Martinsen, Hoffart & Solberge, 1989).

## TREATMENT MECHANISM

The effect of physical activity in the treatment of mental health problems (mood) is viewed from the psychological point of view under the following heading.

**Distraction:** This view physical activity as an intervention that distracts an individual or diverts their thinking, attention and effort from an unfavorable mood to an improved and constructive mood during exercise. Through this a depressed mental condition can be treated.

**Self-efficacy:** Involvement in physical activities and exercises are challenging because it is characterized with voluntarily/referral (participation); competitiveness, and achievement. So the ability to get involve in to regular physical activity can improve mood, through self-confidence, self-accomplishment and success.

**Social interaction:** Social relationship inherent in physical exercise participation such as sharing and the use of facilities and equipment, respect to rules and regulation, mental support and respect of one another plays an important role in treating a mental health condition. (Morgan, 1985; North, McCallagh & Tran, 1990; Ransford, 1982). The effect of physical activity in the prevention of mental health problems has also been explained from the physiological point of view;

**Monoamines:** Physical activity increases the synaptic transmission of monoamines on enzymes which inhibits the breakdown of serotonin and catecholamine in the brain; useful for relief of reactive depression. Exercise facilitates the transmission of monoamines which supposedly functions in the same manner as anti-depressive drug (Dunn & Dihnian, 1991; Nocoloff & Shwenk, 1995).

**Endorphins:** Physical activity causes the release of endogenous opinions (endorplainendogenous morphine). The inhibitory effect of these substances supposedly facilitated by exercise on the central nervous system are responsible for the calm sensation and improved mood usually experience after exercised (Ailen, 2000).

## ANXIETY

Anxiety is a feeling of fear, apprehension and dread normally characterized by recurrent acute attack (panic). The attack consists of all the signs and symptoms of fear, leading up to fear of impending collapse and sometimes death. Physical activity and exercises are purported to alleviate anxiety though there is no controlled study within the literatures reviewed. Some studies reported positive benefit of exercise in reducing symptoms in patients with situational phobias and patients who suffer from panic attacks (Orwin, 1974; Driscol, 1976). Other studies have been positive about the effect of exercise on anxiety sign and symptom (Folkins & Sime, 1981; Morgan, 1985) Experimental studies on acute and chronic exercise have consistently shown a reduction in state anxiety (temporary or transient). Effects of acute exercise are more pronounced in patients with clinical elevation in state anxiety. Changes in trait anxiety following chronic exercise have been less consistent; some studies (Blumenthal, Williams, Needels & Wallace, 1982; Pauly, 1981) have shown a decrease. One study (Stern & Cleary, 1981) has shown an

increase and another study (Stern & Clearly, 1982) has shown no change. Several studies have shown that acute exercise was effective in reducing anxiety as meditation. A state anxiety was reported to decrease as a result of running and attending exercise class and physiological studies have also found that exercise has a relaxation effect (Wilson, Berger & Bird, 1981).

## **PSYCHOSES**

Anecdotes and small group studies with heterogeneous populations suggest that exercise and physical activity can be beneficial for people with schizophrenia. Though no control studies have been undertaken to determine if exercise would alleviate symptoms of schizophrenia, this could be attributed to many methodological flaws and the design were pre-experimental, schizophrenic populations are characterized with high incidence of obesity and other morbid conditions as a result of physical inactivity. There is tentative evidence that participation in exercise is associated with an alleviation of negative symptoms associated with schizophrenia such as depression, low self-esteem, and social withdrawal. No tentative evidence about the effect of exercise as an adjunct for treating positive symptoms like auditory hallucinations (Fullker, 2005; Fulker & Biddle, 2001; Goodwin, 2006).

## **MENTAL ILLNESS PREDISPOSING FACTORS**

Research evidences reviewed has indicated that people with serious mental illness (SMI) have an excess mortality amounted to 23 times higher than in general population (Harris & Barraclough, 1998; Tran & Reuillon, 2009). The mortality gap which shortens the life expectancy of SMI population from 13 to 30 years is widening in recent times even in countries where quality of health care is rated high (Osby, Correia & Brandt, 2000). Individuals with SMI are susceptible to different physical health problems which amount to about 60% of excess mortality. Though these diseases are also prevalent in the general population, their impact on SMI patients are reported to be higher (Vreeland, 2007; Maj, 2009; Parks, Svendsen & Singer, 2006). The increase in morbidity and mortality found in this population are mostly due to a prevalence of modifiable risk factors some of which are related to individual life style and choice; disparity in health care access, utilization and provision; a confluence of patient, provider and system factors (Parks, Svendsen & Singer, 2006; Mitchell, Malone & Doebbeling, 2009).

## **OBESITY**

Research findings reviewed indicated psychotic drugs use in the treatment of schizophrenia also facilitated weight gain among 15- 72% of patients. Weight gain is greatest with zaphine and olanzaphine; intermediate with quetiapine and risperidone while little risk effect in weight gain was found with Aripiprazole, asenapine, risperidone and ziprasidone (Leucht, Burkard & Handerson, 2007; Bobes, Rejas & Garcia-Garcia, 2003) in a review of a randomized, placebo controls of novel anti psychiatric in children and adolescents aged 18 years, the same hierarchy for risk of weight gain was identified. The so-called low potency agents such as thioridazine and thioridazine were found to have a higher risk than high potency such as haloperidol. No anti-psychotic agents, should be considered as true weight neutral (Newcomer, 2009; American Diabetes Association, 2004).

## **CARDIOVASCULAR DISEASES (CVD)**

Reviewed evidence suggest that people with major depression, bipolar disorder and schizophrenia are of significant higher risk for cardiovascular morbidity and mortality than the general population and CVD is found to be the most common causes of death among SMI population (Brown, 1997; Brown, Inskip & Barralough 2000; Colton, Manderschied, 2006). The prevalence CDV in people with Schizophrenia and bipolar disorder especially in younger individuals is 2 to 3 times higher than their normal counterparts (Brown, 1997; Dettert, Dekker & Wood, 2009). Though depression is an independent risk factor for aggravating morbidity and mortality in coronary heart disease (CHD) the major link between depression and CHD is lack of physical activity. People with SMI have significant higher rates of several modifiable risk factors compared with control. They are more likely to be overweight or obese, diabetes mellitus, and hypertension (Hennekens, Henneken & Hollar 2005; Whooley, de-Jonge & Vittinghoff, 2008; Correll, Fredrickson & Kane, 2008).

## **MUSCULOSKELETAL DISEASE**

Schizophrenia, schizoaffective state, major depression and bipolar disorder are associated with low bone mineral density (LBMD). Untreated patients with schizophrenia have an increased risk of developing osteoporosis than the general population. This is been facilitated by the risk factors related to their life style such as smoking, alcohol abuse, vitamin D and calcium deficiency and reduce or lack of physical activity (Misra, Papakostas & Klibanski, 2004) it has been reported consistently that LBMD is found in patients with depressive symptom or major depressive disorder (Michaelson, Stratakis & Hill, 1996; Robinson, Hirsch & Witmer, 2001).

## **EFFECT OF EXERCISE**

In all the above mentioned factors which SMI predisposes and even the ones not mentioned (metabolic syndromes, diabetes mellitus, viral diseases, respiratory tract disease and cancer), lack of physical activity is a common house hold factor mentioned in increasing their risk (Darki & Sadiq, 2009) Epidemiological studies are consistent on the fact that the generally physical active populations are less likely to gain weight over-time than those who are not (Hill, 2002, Brown Williams, Ford, Ball & Dobson, 2003). Exercise is found to be an effective avenue for weight loss in three out of four groups (physically active, physically activated, who exercise once in a week within the last five years, physically activated who exercise in the last five years and physically inactive). Those who are inactive gain weight whereas the other groups either lose weight or maintain it.

Similarly, exercise was found to be effective in people with moderate /high physical activity level (PAL) than in those with low PAL (Dipietro, Zaira & Blair, 2003). In essence it is proved to be effective in reducing obesipredisp periphe IL. This is mentally ill. According to Farmer et al. (1988), exercise not only lower blood chr low density lipoprotein (LDL) but also increase the fraction of cholesterol known as High Density Lipoprotein (HDL) which is protective against CI-ID. For changes to occur and HDL and LDL to be influence by regular exercise, an individual needs to increase his daily energy expenditure to 5000 K cal per week or more (Darki, 2007).

To achieve most of the above observed benefit within the mentally ill population, special physical activity; exercise program needs to be design in order to prevent, control and manage the numerous complications brought by mental ill condition which in most cases lead to lost of life.

## **CONCLUSION**

From the foregoing review, an evidence was established that physical activity plays a significant role in the prevention, control and management of mental health problems symptomatically (depression, anxiety, schizophrenia) and serious mental illness (SMI), predisposition factor (Obesity, cardiovascular diseases and musculoskeletal diseases. Achieving maximum benefit from exercises needs combined effort of professionals (psychiatrists, doctors, exercise scientists and psychologists) through a team approach. A controlled combined therapy of exercise and medication could be a good venture for reducing the severity of mental complications.

## **Recommendations**

- Professional bodies and government should be organizing seminar workshops and public symposium with the aim of enlightening the family, psychiatric institutions and general public on the need of increase physical activity and general fitness for the mentally ill populations.
- Psychiatric institutions should provide programmes and settings that will facilitate exercises
- Psychiatric institutions should employ the services of exercise professionals in designing, recommending and conducting exercises for the mentally ill population;
- The mentally ill should from time to time be integrated with normal population in certain exercises or games as this will reduce the stigma and neglect they use to suffer and encourage their participation;
- Psychiatric doctors should also refer their patients to exercise specialist along with their prescription of anti-psychotic drugs in order to neutralize the drugs of weight gain tendencies.

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