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Physical Activity and Thriving Community: Can Group-Walking Generate Social Capital? A Literature Review

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Physical Activity and Thriving Community: Can Group-Walking Generate Social Capital? A Literature Review

Abstract

Positive psychology is an empirical study of the conditions and processes that contribute to the flourishing or optimal functioning of individuals, groups, and society. Positive relationships play a crucial role in well-being, and yet, social capital in the United States has been declining with individuals becoming more isolated. Thus, an innovative positive intervention that promotes stronger social ties between members of society could vastly improve the well-being of individuals as well as the community as a whole. Recently, researchers have reported that oxytocin promotes pro-social interaction, trustworthiness, and empathy. There is also research showing that physical activity increases oxytocin level. In this manuscript, the impact of group-based walking intervention on community development is discussed. It is found that group-based walking interventions substantially increase social capital that includes sense of connectedness, collective efficacy, social engagement, acceptance of other groups, and improved social infrastructures. Throughout the literature, key factors for successful interventions emerged which were a competent walking group leader, strong partnership between government and community, a local facility, being part of a larger program, identification of opportunities for participation in community activities (e.g. charity), and receiving regular feedback from participants and stakeholders.

Keywords

physical activity, community, social capital, social well-being

Disciplines

Community Health and Preventive Medicine | Community Psychology | Social Psychology | Social Work | Sports Studies

Running Head: Physical Activity and Thriving Community

Physical Activity and Thriving Community:
Can Group-Walking Generate Social Capital? A Literature Review

Harold Lee

University of Pennsylvania

A Capstone Project Submitted

In Partial Fulfillment of the Requirements for the Degree of

Master of Applied Positive Psychology

Advisor: Gloria Park, Ph.D.

August 1, 2014

Physical Activity and Thriving Community:
Can Group-Walking Generate Social Capital? A Literature Review

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Abstract

Positive psychology is an empirical study of the conditions and processes that contribute to the flourishing or optimal functioning of individuals, groups, and society. Positive relationships play a crucial role in well-being, and yet, social capital in the United States has been declining with individuals becoming more isolated. Thus, an innovative positive intervention that promotes stronger social ties between members of society could vastly improve the well-being of individuals as well as the community as a whole. Recently, researchers have reported that oxytocin promotes pro-social interaction, trustworthiness, and empathy. There is also research showing that physical activity increases oxytocin level. In this manuscript, the impact of group-based walking intervention on community development is discussed. It is found that group-based walking interventions substantially increase social capital that includes sense of connectedness, collective efficacy, social engagement, acceptance of other groups, and improved social infrastructures. Throughout the literature, key factors for successful interventions emerged which were a competent walking group leader, strong partnership between government and community, a local facility, being part of a larger program, identification of opportunities for participation in community activities (e.g. charity), and receiving regular feedback from participants and stakeholders.

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I. Introduction

History of Positive Psychology

Positive psychology is the study of the conditions and processes that contribute to the flourishing or optimal functioning of individual, community, and society. Positive psychology has a long history, dating back to William James's writings on "healthy mindedness" in 1902, Allport's dialogue in positive human characteristics in 1958, and Maslow's proposal for the study of healthy people instead of sick people in 1968. In 2000, a positive psychology movement was initiated when Seligman and Csikszentmihalyi published a special issue of *American Psychologist* devoted to positive psychology. They appealed to the academic community in psychology that the field was not producing enough "knowledge of what makes life worth living" (Seligman & Csikszentmihalyi, 2000, p. 5). The premise was that psychology learned much about depression, racism, violence, and irrationality but showed much less progress in inquiry into character strengths, virtues, and the conditions that lead to high levels of happiness or civic engagement (Gable & Haidt, 2005).

If traditional psychology had been focusing on what is wrong with people, positive psychology studies what is right with people (Seligman & Csikszentmihalyi, 2000). Before World War II, psychology had three missions: 1) cure mental illnesses, 2) make productive and fulfilling lives, and 3) identify and nurture talent (Seligman & Csikszentmihalyi, 2000). Since World War II, the science of psychology has centered mainly on the first mission: to cure mental illnesses. The field focused on curing defects within a disease model of human functioning, and showed remarkable progress in the past decades. Psychologists discovered cures and treatments for fourteen psychological disorders and created *Diagnostic and Statistical Manual of Mental Disorders*, which allowed practitioners and scientists to use universal terms to diagnose and treat

mental illnesses (Seligman & Csikszentmihalyi, 2000). Despite the smashing success in treating psychological problems, insignificant progress has been made in the second and third missions: promoting fulfilled individuals and thriving communities; and nurturing talent. Positive psychology is the study of the second and third missions, or what is “right” about people and society—their positive attributes, psychological assets, and strengths (Seligman & Csikszentmihalyi, 2000).

Positive Psychology and Science: Positive Interventions

A working definition of positive psychology would be “the science of happiness” (Diener, 2000, p. 34). That is, positive psychology is the empirical study of positive subjective experience, positive individual traits, and positive institution (Seligman & Csikszentmihalyi, 2000). For purposes of better analyzing and measuring happiness, scientists in the field of positive psychology have compartmentalized this seemingly abstract construct of happiness into five categories. Represented by the acronym PERMA, the five categories include **P**ositive emotion, positive **E**ngagement, positive **R**elationships, **M**eaning in life, and **A**chievement. As the concept of PERMA and well-being became a subject of scientific interest, scientists attempted to conduct laboratory experiments and created positive interventions aimed at increasing well-being, or PERMA. What distinguishes positive interventions from wise advices from grandparents or self-help gurus are their reliability: positive interventions are reliable as they are empirically tested via exhaustive scientific methods. In other words, if self-help interventions are great ideas in a brain-storming stage, positive interventions are methods that have undergone rigorous scientific critiques and survived. Not surprisingly, a meta-analysis shows that positive interventions are effective in that they increase well-being and decrease depression (Sin & Lyubomirsky, 2009).

Definition of Well-being in Positive Psychology

Well-being is a complicated construct to measure. Individuals in different stages of life and from various cultures and backgrounds have different subjective interpretations or cultural norms that influence how they define and improve their well-being. Given this variability within and between societies, scientific endeavors to apply theories in well-being within each context with high precision seem extremely challenging. To overcome this challenge, Pawelski (2012), denotes that it is crucial for positive psychology to embrace the insights of humanities.

Well-being in positive psychology incorporates a moral and ethical aspect. Although happiness and/or well-being came into the realm of science only recently, it has long been the interest of many philosophers such as Aristotle and William James. Given the historical background of humans' innate interest in the good life, the empirical research of positive psychology builds on foundations from philosophy, cognitive behavioral therapy, humanism, and moral psychology (Seligman & Csikszentmihalyi, 2000). To this effect, an operational definition of happiness in positive psychology is eudemonia, which is a Greek term that means "flourishing" or "practical wisdom" (Melchert, 2002). It is interesting to note that the term, eudemonia, also incorporates ethical virtues. According to Socrates, Plato, and Aristotle, virtuous person is the happy person (Melchert, 2002). To be consistent with the definition of well-being in positive psychology, the field aims to build a good inner self or character strength at the individual level and altruistic community or collective efficacy at the societal level. Therefore, it is worthwhile to note that happiness, well-being, good life, fulfilled individuals, thriving communities, and human flourishing discussed in this manuscript will be referring to the eudemonic aspect of wellness.

II. Positive Relationships

Primary Source of Well-being: “I” vs. “We”

Investigating the primary source of well-being -whether for an individual or groups- may shed light on how the public can best use positive psychology and positive interventions. According to research on language used in social media, people tend to use the personal pronoun ‘we’ more frequently and ‘I’ less as they age (Schwartz et al., 2013). Frequency of the usage of ‘I’ on Facebook decreases steadily into the early twenties, and the usage of ‘We’ tends to increase after twenty-three years of age continually. One could speculate that the usage of ‘we’ would increase as people marry, but it continues to increase across the whole lifespan. On a related note, happiness has been reported to increase as people age (Mroczek & Kolarz, 1998). It may lead one to conclude that well-being stems more from the sense of belonging to a group (we) than from being just an individual (I).

Tom Rath, a senior scientist at Gallup and a bestselling author of *Five Elements of Wellbeing*, included “social well-being” and “community well-being” as two of the five main elements that constitute well-being; other elements were career well-being, financial well-being, and physical well-being (Rath, Harter, & Harter, 2010). Rath’s inclusion of the social and community aspects of well-being is consistent with the idea of “positive relationships” as one of the five main constructs in the PERMA model of happiness. Of note, each element of well-being must have three properties to count as an element (Seligman, 2012):

1. It contributes to well-being.
2. Many people pursue it for its own sake, not merely to get any of the other elements.
3. It is defined and measured independently of the other elements (exclusivity).

Given the criteria, it may be worthwhile to investigate whether positive relationship indeed qualifies as one of the five elements of well-being in positive psychology.

Contribution of Positive Relationships to Well-being

Various studies support the concept that positive relationships contribute to well-being. According to Seligman (2012) “scientists have found that doing kindness produces the single most reliable momentary increase in well-being of any we have tested” (p. 20). In addition, positive relationships also relate to positive health, an emerging field within positive psychology (Seligman, 2008). Positive health stresses the importance of building positive health assets - strengths that can contribute to a healthier, longer life. In empirical research, positive health can be operationalized by a combination of excellent status on biological (e.g., heart rate variability and fitness), subjective (e.g., optimism, social cohesion, trustworthiness), and functional measures (e.g., marriage) (Seligman, 2008). Ample researches have shown that positive relationships (e.g. existence of social capital, trustworthiness of neighbor) is associated with decreased mortality and disease rate (Islam, Merlo, Kawachi, Lindström, & Gerdtham, 2006; Kawachi, Subramanian, & Kim, 2008; Kawachi, Kennedy, Lochner & Prothrow-Stith, 1997).

Pursuit of Positive Relationships for Their Own Sake

The second criterion for positive relationships as an element of well-being is whether people pursue positive relationships for its own sake or because they entail other aspects of well-being, i.e., positive emotion, engagement, meaning, accomplishment.

According to Edward Wilson and recent research in moral psychology, positive relationships are important for its own sake in human evolution. A competition between “self-

interest” and altruistic behaviors “for the good of the group” has been termed the “fundamental problem of social life” (Darwin, 1871, p. 166). Traits that are “for the good of the group” are usually not favored by individuals’ selection within group; however, altruists instill competitive edge in the group, which ultimately favors selection between groups. Darwin’s insight seems to provide an elegant theoretical foundation to investigate the balance between individual and group selection, but the notion of group selection was widely rejected in the 1960s, namely by George C. Williams (1966). However, when Williams and others rejected group selection, they were rejecting the possibility that adaptations evolve above the level of individual organisms. A decade later, Edward Wilson (1980) suggested a counter argument to Williams stating that adaptation could occur at a level higher than individual organisms. Although selfish individuals may outcompete altruists within groups, internally altruistic groups outcompete selfish groups. This is the essential logic of multilevel selection theory in sociobiology (Wilson, 1980). Basically, Wilson is arguing that being social is the most successful form of higher adaptation.

The latest research in moral psychology reveals that humans have social motivations beyond direct self-interest, which ultimately suggests that the primary source of happiness not only lies in “I” but also “we”. As the definition of well-being in positive psychology (i.e., eudemonia) incorporates a moral aspect, moral psychology has been one of the main interests in recent development in positive psychology movement (Haidt, 2003). According to Jonathan Haidt (2007) who is a positive psychologist specializing in morality, people are self-interested, but they also care about how they (and others) treat people and participate in groups. Most articles on the evolution of morality cover two processes: kin selection-genes for altruism can evolve if altruism is targeted at kin-and reciprocal altruism-genes for altruism can evolve if altruism and vengeance are targeted at those who do and don’t return favors, respectively (Haidt,

2007). Nonetheless, Richerson and Boyd (2005) noted that these two processes alone cannot explain the extraordinary degree to which people cooperate with strangers they'll never meet again and sacrifice for large groups composed of non-kin. An additional process at work, according to Haidt (2007), could be explained by the insight of Emile Durkheim (2012) who stated that morality binds and builds as it constrains individuals and ties them to each other to create groups that are emergent entities with new properties. Haidt (2008), therefore, argues that humans are different from chimpanzees, not because of intellectual superiority, but because of humans' innate ability to cooperate with each other. What's more, according to Adam Grant (2013), being an altruist is shown to result in long term success in the work place. In his book, *Give and Take: A Revolutionary Approach to Success*, Grant, using his own pioneering research, articulates how altruists in the business market climb up to the top of the competition and succeed in the long run, suggesting that being altruistic is not only virtuous but also beneficial. Taken together, given the importance of individuals' ability to cooperate to engender a competitive edge over other groups, many people pursue positive relationships for their own sake, not merely to get any of the other elements.

Definition and Measurement of Positive Relationships

The last criterion to be counted as an element of PERMA was to be “defined and measured independently of the other elements” (Seligman, 2011, p. 16). Positive relationships have been studied in other academic realms such as sociology and political science although it was measured and tested under a slightly different definition. Positive relationships are indeed a broad term, and when investigators write about the impact of positive relationships on well-being and physical health, many terms are used loosely and interchangeably including social capital,

social network, social support, social ties, and social integration. Each of these constructs tap into slightly different, yet overlapping, aspects of social relationships. Despite differences in the approach to measurement, there is a general agreement that community characteristics should be distinguished from individual characteristics and measured at the community level (Lochner, Kawachi, & Kennedy, 1999).

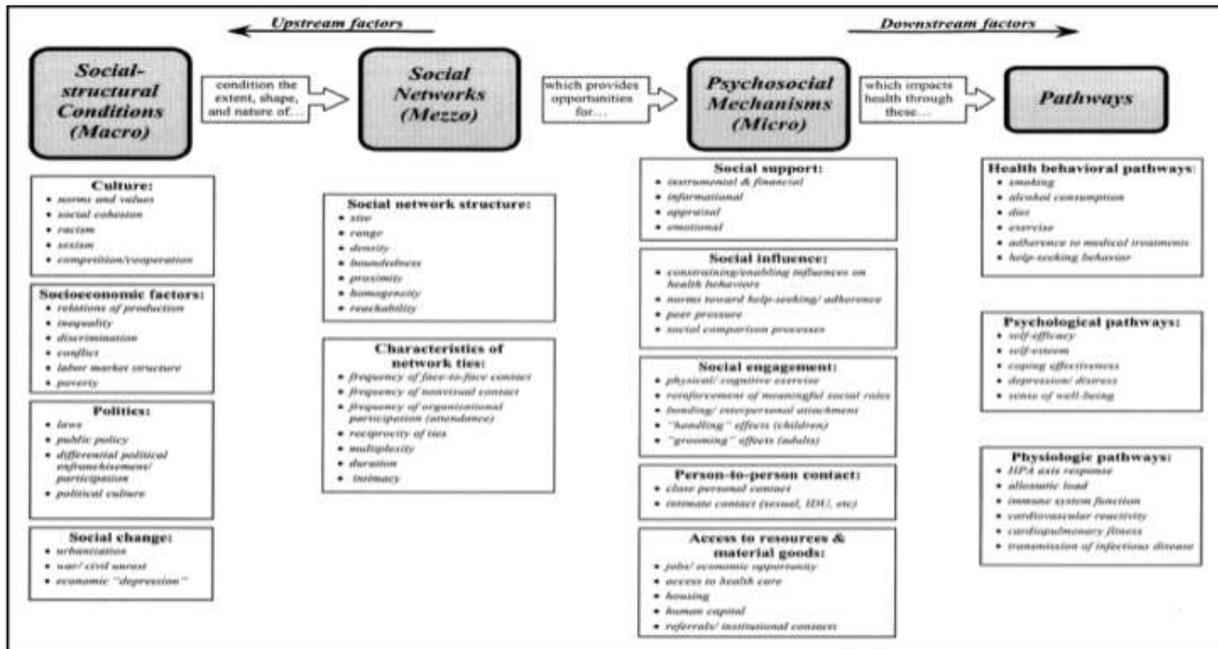
Providing definitional aspects of “positive relationships” will be helpful for the future communication. Social cohesion refers to the extent of connectedness and solidarity among groups in society. Social cohesion may be described as 1) the absence of latent social conflict (e.g. wealth inequality, racial/ethnic tension) and 2) the presence of strong social bonds measured by the level of trust and norms of reciprocity (i.e. social capital). Durkheim noted that a cohesive society is one that has abundance of “mutual moral support, which instead of throwing the individuals on his own resources, leads him to share in the collective energy and supports his own when exhausted” (1897, 1997, p. 210). A cohesive society is also one that is richly furnished with stocks of social capital. Social capital is defined as features of social structures – such as levels of interpersonal trust and norms of reciprocity and mutual aid. These assets act as resources for individuals and facilitate collective action (Coleman, 1990; Putnam 1993).

Berkman and Glass (2000, p. 143) proposed a model (**Figure 2**) emphasizing the importance of social networks in the health and illness context across multiple social, cultural, and behavioral structures. This model provides a thorough identification of factors affecting human health, and may have crucial implications for future research in positive relationship and well-being.

According to the model, the effects of social networks on human health are dictated by the structure and characteristics of the network, existing macro- and micro-level conditions, and both upstream and downstream factors. Basically, if social structure is the light bulb (macro), the

social network is electricity (mezzo), and light will come up via psychological mechanisms (micro) and pathways. Brightness of the light bulb could be affected by the light bulb, electricity, and other factors.

Figure 2. Model proposed by Berman and Glass (2000, p. 143).



Given the importance of positive relationships for well-being, as well as for securing societal competitiveness over other societies, recent deterioration of social capital in the United States is alarming and calls attention to positive interventions that could build tightly-connected community. Support for the fall in social capital is reflected by the lack of civic engagement in many Western Countries, which is imperative in allowing democracy to thrive. In the US, parent-teacher associations, the National Federation of Women’s Clubs, the League of Women Voters and Red Cross have all experienced membership declines of around fifty percent since the 1960s (Giddens, 2006, p. 675). In addition, the number of Americans who reply they “trust the

government in Washington” only “some of the time” or “almost never” has risen steadily from thirty percent in 1966 to seventy-five percent in 1992 (Putnam, 1995). Nonetheless, research on “how” to make a thriving community has been incompletely explored. Therefore, the purpose of this paper is to explore existing literature on research around building stronger communities. According to Pawelski (2012), re-examining existing positive intervention is as important as inventing new positive interventions. Among many other positive interventions, I propose that group-based physical activity intervention has great potential to promote community well-being, specifically, a “thriving community”.

In summary, positive psychology is an empirical study about what is “right” about people, and the field has made significant progress since 1998. PERMA (*P*ositive emotion, positive *E*ngagement, positive *R*elationships, *M*eaning and purpose, *A*chievement and accomplishment) has been proposed as a compilation of five main constructs that constitute well-being and has been empirically tested. Positive relationships play a crucial role in having a good life, and yet, social capital in the US has been declining, and researchers called attention for innovative positive interventions to promote societal well-being. In the following chapter, the rationale of why physical activity is an appropriate positive interventions will be discussed. Then, the chapter will explicate what we already know about physical activity and well-being.

III. Physical Activity and the Good Life

Definition of Physical Activity, Exercise, and Sport

Prior to investigating the literature, providing definitions of physical activity, exercise, and sports would be helpful for thorough understanding of the relation between those activities and thriving communities.

Physical activity is bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen, Powell, & Christenson, 1985). Typically, the kcal, measure of heat, or time per week, has been employed to measure physical activity. The amount of energy expended by each person is a continuous variable, ranging from low to high. The total amount of caloric expenditure associated with physical activity is determined by the amount of muscle mass producing bodily movements and the intensity, duration, and frequency of muscular contractions (Taylor et al., 1978).

Exercise is a subcategory of physical activity. Exercise is physical activity that is planned, structured, repetitive, and purposive in the sense that improvement or maintenance of one or more components of physical fitness is an objective (Caspersen et al., 1985). Exercise, however, has been used interchangeably with physical activity, and, in fact, both have several common elements.

Sport is an activity involving physical exertion and skill in which an individual or team competes against another or others for entertainment. Sport is a very complex phenomenon. There are many cultures within school sports and club sports, and thereby it will not be discussed in present paper. Nonetheless, benefits of sports and wellbeing are well documented, and should not be neglected as a potential positive interventions to promote positive relationship. For instance, Harvard students involved in varsity teams had a slightly lower GPA than their peers, but reported a higher degree of satisfaction with their university experience (Light, 2001). Athletes have more friends and a stronger sense of belonging to their institution. They are, according to Light, "the happiest on campus". Sport participation is also reported to increase perceived social supports (Nicholson, Brown, & Hoyer, 2014), and many theoretical discussions has been made for its potential to enhance social capital (Putnam, 1995; Darcy, Maxwell,

Edwards, Onyx, & Sherker, 2014; Nicholson & Hoye, 2008). Yet, there are skeptical view alerting the sport community requesting rigorous study design that could articulate the process of social capital formulation via sport participation (Coalter, 2007). And, for the same reason, present paper aims to explore the smaller segment of sport, group-based physical activity, and its relation to thriving community.

Historical Perspective: Physical Activity and the Good Life

“Since it is obvious that education by habit-forming must precede education by reasoned instructions ... it is clear that we must subject our children to gymnastics and physical training”. (*Politics*, 1138b)

According to Aristotle, acquisition of moral habit was inherently practical and experiential matter. He noted, “Anything that we have to learn to do, we learn by the actual doing of it” (NE, 1103a, 32-33). In addition to Aristotle, Socrates and Plato agreed that having a good rationale and virtue was an essential feature of human beings, and thus considered it as a critical factor to determine the quality of “good” or “excellence” in humans. Specifically, they all believed that the quality of “good” should be prescribed by its proper function. For instance, a good pianist is one who plays the piano with excellence, and more importantly, a pianist is happy when he or she performs with excellence. Thus, what distinguishes humans from other creatures is their ability to reason rationally. However, Aristotle slightly differed in his idea from Socrates and Plato; Aristotle thought knowledge alone is not sufficient for a person to be ethical. Aristotle noted that the subject matter in ethics is practical – choice, character, and action, and therefore he thought ethics is a practical art, but not a science (Melchert, 2002). Aristotle argued that having a virtue of a certain kind is to have a disposition accompanied by right reason with practical sense

(Melcher, 2002). As Aristotle stressed practicality, he underscored the importance of action, deed, and habit. He noted that such attributes add precision when applying knowledge most proper to the given situation, or the mean (i.e. just right point), ultimately improving the practical wisdom.

William James further delves into the science of knowledge and action. He noted that positive emotions that do not lead to action are rather harmful; he therefore suggested systematically acting on small thoughts to form new habits (James, 1983). In his work, *Talks to Teachers*, James highlighted the physical feature of the habit: plasticity (James, 1983). Since the physical substance of the brain is plastic, making a new habit is not different from paving a physical pathway in the brain (1983). Thus, when stimuli enter into the brain, one of the two things happen; it should either deepen the new path or make new ones. New knowledge and positive emotions are stimuli as well. James (1983), therefore, stresses the importance of acting on these knowledge and positive emotions to pave a new physical path in the brain (i.e., make a new habit). According to James, when a great feeling vanishes without bearing any practical deed, it is worse than a chance lost. If one becomes filled with emotions which habitually pass without prompting to any deed, one creates a habit of evaporating attention. In order to prevent this, James (1983) suggests making an effort to exercise a little gratuitously every day - systematically ascetic or heroic in little unnecessary situations. By connecting even the smallest acts with attention, one can form a new habit. Then, when one faces a situation that requires a great deal of courage or compassion, one can perform an excellent act by habit.

Csikszentmihalyi states that frequent experiences of flow, perfect alignment of psychic energy and conscious, lead to well-being (Czikszentmihalyi, 1990). Consciousness allows us to control all information received from our senses by weighing and prioritizing information. However, there are some obstacles in controlling consciousness. One of the main forces that

affect consciousness adversely is psychic disorder which causes information that conflicts with existing intention. This notion of psychic disorder aligns with the harmful effect of the aforementioned ‘evaporating good feeling’ by James; intention are discordant with their acts. However, when the information coming into attention is in harmony with goals, psychic energy flows effortlessly. This optimal experience is called “flow” (Csikszentmihalyi, 1990). Csikszentmihalyi notes that frequent experiences of flow lead to a happier life. Therefore, effective positive interventions should connect good attention, will, and consciousness to an act or a habit in order to increase the frequent experience of flow. Then, how can we experience flow?

Jackson & Csikszentmihalyi noted that “among all the things that people do in their lives, sport presents a special opportunity for flow to occur” (1999, p.6). Csikszentmihalyi and colleagues have found that sport, in particular, is associated with a number of very positive qualities (**Figure 1**). The Y axis represents the Experience Sampling Method (ESM) – the scores are obtained by asking people at several randomly chosen times each day how they feel while they are doing various activities –, and at the far right side of the X axis “flow” is plotted. It shows that adolescents experienced flow while engaging in sport activity more often than academic activities and watching TV.

Figure 1. Flow and Sports (Jackson & Csikszentmihalyi, 1999, p. 6)

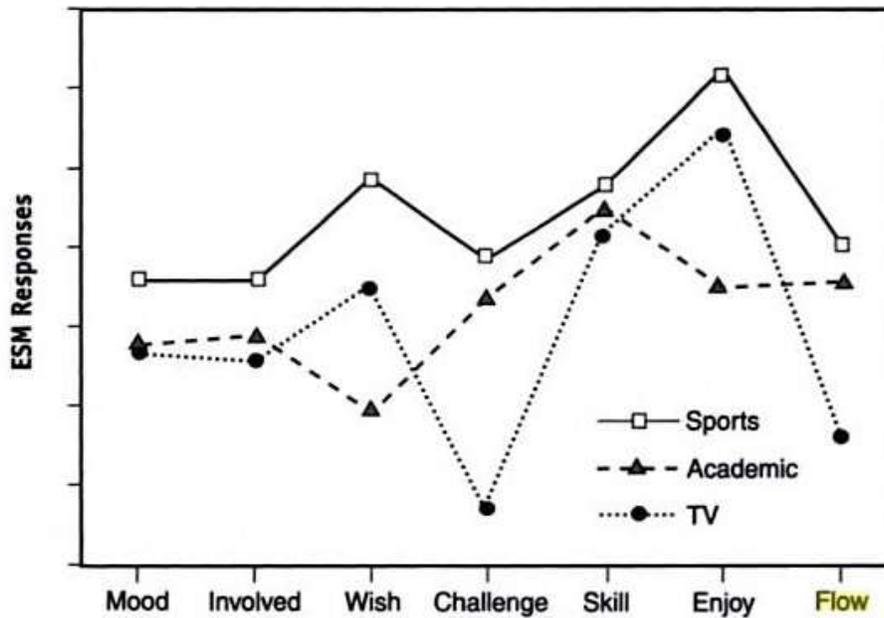


Figure 1.1 ESM responses from a sample of more than 800 representative U.S. adolescents aged 11 to 18. Source: Unpublished data from the Sloan Study of Adolescent Development (1995), C. Bidwell, M. Csikszentmihalyi, L. Hedges, and B. Schneider, principal investigators. The University of Chicago.

Modern View: Why is Physical Activity an Appropriate Positive Intervention?

Well-being is more than just a state of mind – it is a state of being (Park, 2007). Whether the optimal human functioning stems from mind or body (i.e., physical self) has important implications when defining well-being and creating positive interventions. Through burgeoning fields such as neurobiology and psychoneuroimmunology, we now know that mind and body are intricately interwoven. In this regard, a lack of recognition for the role of the physical self has been criticized positive psychology has been primarily devoted to investigating happiness as a state of mind (Resnick, Warmoth, & Serlin, 2001). In fact, Seligman (2008) expressed his concern that the field has become a “neck-up”-focused discipline (i.e., well-being as a state of mind). In *Positive Psychology Practice*, Mutrie and Faulkner (2004) argued that regular physical activity could promote psychological and emotional strength, which could be referred as “neck-

down”-focused discipline or somapsychic principle. This somapsychic principle was first claimed by Dorothy Harris (1973) who was a pioneer in research on physical activity and well-being. Just as the mind (psyche) can influence the body (soma), the term somatopsychic posits that the body can have a reciprocal effect on the mind and happiness (Hefferon, 2013). Optimal functioning goes beyond cognitive health and must focus on the need for optimal physical functioning on overall flourishing (Loehr & Schwartz, 2001; 2003).

Impact of Physical Activity on Well-being

Despite the interrelated feature of mind and body, research in physical activity and exercise evolved in different vein: “well-being of mind” (i.e., mental health) and “well-being of body” (i.e., physical health). In the past several decades, the latter is well researched and publicized. It is now a common sense that physical activity is beneficial for our physical health (e.g., weight maintenance, type II diabetes, cholesterol level, cardiovascular disease). In fact, benefits of physical activity on physical health are well accepted even within the most reductionist part of the academic community: cell and molecular biology. In terms of physical health, the key molecule found to mediate the benefit of physical activity on our metabolism is a protein called peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PGC-1 α) (Boström et al., 2012). PGC-1 α is a regulator of mitochondrial biogenesis and function, and it transforms white fat into brown fat. More recently, Roberts et al. (2014) showed that levels of the molecule called beta-aminoisobutyric acid (BAIBA) increases during exercise, and this particular molecule increases the expression of calorie-burning genes in fat cells. In addition, rising levels of BAIBA during exercise was associated with benefits to triglyceride, fasting blood sugar and total cholesterol levels (Roberts et al., 2014).

Researchers have made progress into exploring the relationship between physical activity and “well-being of mind”. In *Positive Psychology Practice*, Mutrie and Faulkner (2004) wrote a chapter about physical activity and well-being, where they argue that physical activity could help both individuals and communities to flourish. At an individual level, they demonstrated that physical activity can improve psychological well-being, quality of life, and coping with mental disorders (Norris, Carroll, & Cochrane, 1992; Fox, 1999). To investigate the effects of exercise training on psychological well-being, Norris, Carroll and Cochrane (1992) assigned 147 adolescents (aged 13–17 yrs) to one of four groups: high or moderate intensity aerobic training, or flexibility training, or control group. The training groups met twice per week for 25–30 min. Aerobic fitness levels, heart rate, blood pressure and self-report of stress and well-being were measured prior to and following 10 weeks of training. Adolescents undergoing high intensity exercise reported significantly less stress than subjects in the remaining three groups. The relationship between stresses, anxiety, depression, hostility for the high intensity group was considerably weakened at the end of the training period. Furthermore, Sjögren et al. (2006) reported that even small amount of exercise (i.e., 5 min per day) could improve psychological well-being in their longitudinal study. To examine the effects of a workplace exercise intervention on subjective physical well-being, psychosocial functioning and general well-being, they used cross-over design consisted of one 15-week intervention period of light resistance training and guidance, and another 15-week period of no training and no guidance. The active component of the intervention, light resistance training, resulted in a slight, but statistically significant, increase in subjective physical well-being. Given the hurried lifestyle of modern society, the results of this study might have a major impact on increasing the percentage of people exercising. If one decides to exercise for mental health, he or she may need to invest 5

min per day as opposed to current recommendation of 30 min per day (Physical Activity Guidelines Advisory Committee, 2008). In addition, exercise is reported to improve cognitive function (Cotman, Berchtold, & Christie, 2007), slowing neurodegenerative disease progression such as Alzheimer's disease (Rolland, Abellan van Kan, & Vellas, 2008) and Parkinson's disease (Dibble, Addison, & Papa, 2009). Scientist found that benefits of exercise on mental health are mediated via the impact of physical activity on brain-derived neurotropic factor (BDNF) and gamma-Aminobutyric acid (GABA) (Wrann et al., 2013; Hill, Droste, Nutt, Linthorst, & Reul, 2010). They both promote growth and differentiation of new neurons and synapses in our brain (Egan et al., 2003; Ben-Ari, Gaiarsa, Tyzio, & Khazipov, 2007). In addition, Malberg & Monteggia (2008) argued that exercise may provide novel targets for the development of more potent and specific treatments of depression. Two studies suggest that VGF - a neuropeptide that has previously been shown to be involved in maintaining energy balance, as well as in mediating hippocampal synaptic plasticity - which is encoded by a gene that is responsive to BDNF and exercise, may be an important mediator of antidepressant responses (Hunberg et al., 2007; Thakker-Varia et al., 2007).

At a community level, Mutrie and Faulkner (2004) suggested that community in which physical activity is considered the social norm, they are most likely to be healthier and have more social capital compared to other communities. However, they pointed out that less empirical research has been done to examine the impact of physical activity on community well-being. Thus, they concluded their chapter by calling attention for more research in this realm – physical activity and stronger community.

In summary, as eudemonia is a state of being, but not merely a state of mind, more neck-down intervention are needed in current positive psychology interventions. In addition, the

notion of action, deed, and habit aligns with philosophy of Aristotle and William James.

Moreover, one of the founders of positive psychology movement, Csikszentmihalyi, suggested sport as one of the optimal activity to experience flow, perfect alignment of psychic energy and consciousness, which ultimately leads us to happier life. Research in physical activity and well-being has been mainly focused on individual level, both physical and mentally, but less is studied in terms of its potential to create thriving community. Therefore, the aim of this paper is to investigate the literature that examined the relationship between group-based physical activity and community development.

IV. Literature Review: Group-based Walking and Thriving Community

Neurobiological Plausibility: Physical Activity and Oxytocin

The term “thriving community” is used when defining positive psychology as much as “fulfilled individuals”. But what makes thriving community thrive? Positive psychology has shown remarkable progress in this domain. As discussed earlier, group selections shows that acting for the “good of the group” not only engender positive emotion, but also enhances fitness of the group.

Then, what drives our desire to behave altruistically and morally? Neuroeconomist, Paul Zak, believes oxytocin (he calls it "the moral molecule") is responsible for trust, empathy and other feelings that help build a stable society. Oxytocin is involved in the labor process, so typically, new mothers have overflowing level of oxytocin which is believed to promote bonding between mother and infant. An abundance of neuroscientific research has shown that positive social interactions are linked to the neuropeptide oxytocin (Crockford, Deschner, Ziegler, & Wittig, 2014; Simpson et al., 2014). According to Kosfeld et al. (2005), the intranasal

administration of oxytocin causes a substantial increase in trust among humans, thereby greatly increasing the benefits from social interaction. Pepping and Timmermans (2012) argued that since oxytocin is linked to key processes relevant to team sport (e.g., empathy, trust, generosity, altruism, cohesion, cooperation), it provides an important bio-psychological basis for performance in team sports. It is difficult, however, to directly quantify changes in oxytocin levels during sports, mainly due to practical logistics as few teams will be willing to pause games to draw blood. But there are evidences that physical activity, per se, may heighten oxytocin level. Hew-Butler et al. (2008) reported that distance runners had significantly higher bloodstream levels of oxytocin after completing an ultra-marathon compared to baseline intake. In addition, Gutkowska et al. (2007) reported increased level of cardiac oxytocin level after exercise training in ovariectomized rats. Taken together, both clinical and animal study implies that physical activity, by itself, has potential to promote “the moral molecule”, oxytocin. This biological plausibility implies that physical activity could be a stellar platform to carry positive interventions that aim to strengthen social ties.

Empirical Research: Walking and Community Development

Research demonstrates that community-based walking interventions effectively strengthen the communities in which the interventions are run. Paul Zak, who pioneered the research in oxytocin and trust behavior, suggested several non-pharmaceutical ways to enhance oxytocin level: hugging, dancing, involving in social network service (e.g., Facebook and Twitter), and walking with others (Oaklander, 2013). Therefore, among various kinds of physical activity, present paper explored the literatures that examined group-based walking activity and its impact on community development.

Walking is the most popular sport and recreation physical activity. Walking does not require any special skills or equipment, and it can be done almost anywhere and with little cost. Group-based walking programs have been conducted with older adults, women, new mothers, people from non-English speaking backgrounds, as well as low income populations and have generally shown promising results with respect to fostering social capital like social networks and support, cooperation, and community involvement and promoting physical activity participation (Wen et al., 2002; Bayly & Bull, 2001; Watson et al., 2005).

Just Walk It is a community-based physical activity intervention that aims to increase regular participation in physical activity (Fisher, Ford, Abernethy, Ritchie, Miller, & Hutchins, 1998). The primary aim of the Just Walk It program was health promotion, and the secondary aim was to build partnerships between different community and government organizations. The program encouraged community members to participate in physical activity in an enjoyable, positive and non-competitive environment. The program also inspired community ownership of their local walking group, with trained community volunteers maintaining each group and local support from shops and facilities as meeting points. Moreover, the program has been evaluated with pilot results informing the development of a state-wide program, which eventually became a nation-wide program in Australia.

The Just Walk It program started as 35 walking groups based in several communities in southeast Queensland in 1995. Each walking group had an average of 6 people. The program recruited volunteers from the community and trained them as walking guides. Just Walk It provided them with education resources and a guide to developing a walking group in their neighborhoods. Support was also provided by a centrally based coordinator at the National Heart Foundation Brisbane office. Participants reported their main reasons for joining the program

were for socializing (48%) and for improving or maintaining their fitness (46%). The researchers concluded that the combination of the guides' enthusiasm, the homogeneity of the walkers, the perceived social support received from friends and family were major factors that contributed to the maintenance and cohesion of the walking groups (Fisher et al., 1998). Just Walk It program is one of the most successful community-based physical activity promotions that showed magnificent result for several reasons. It was an inexpensive approach to reaching large sections of the community and the program expanded to include the entire state of Queensland with support from health, sport and recreation, and local government agencies (Fisher et al., 1998). Evaluation of the program showed that Just Walk It is a popular and acceptable program with over 4000 participants in 75 communities and 350 volunteers organizing over 300 different groups (Fisher et al., 1999). The 6 month retention rate was 80% and the proportion of participants was predominantly female and more than half were over 50 years of age. There were significant increases in physical activity in walking group participants 6 months after the program compared with before joining the program (from 50% to 63% after 6 months). Chiropractors' Association of Australia now runs this program in most states and territories of Australia using this partnership approach, and the website is connected to social network services such as Facebook and Twitter (www.juststartwalking.com). Now that we know social network service use increases oxytocin level (Oaklander, 2013), the programs may have even greater competency in building thriving communities via physical activity.

Another successful group-based walking intervention was The Lockridge Walking Group (Bayly & Bull, 2001), which was also conducted in Australia. Existed since 1993, The Lockridge Walking Group was conducted in disadvantaged suburb of Perth, involving members of diverse language and cultural back ground. The primary aim of this program was to increase physical

activity level among women in a low socioeconomic status area in Perth. Participants reported numerous physical and mental health benefits from participating. In addition, the program enhanced social capital in the communities in which the walking groups are based that includes improved social and support networks, increased community cohesiveness and trust, greater sense of belonging and augmented community image (Bayly & Bull, 2001). Survey respondents confirmed that reciprocity was strong within the Lockridge Walking Group with almost all (97%, n=27) either strongly agreeing (93%) or agreeing (4%) (Bayly & Bull, 2001). Diversity and acceptance was recognized and enjoyed by most participants. Group's ethnic 'heterogeneity' was perceived as a positive aspect of the group. One of the focus group participants noted:

We've got such a mixture you know, (laughter) that you can always learn something from them as well, you know, they can learn from you and you can learn from them

Not surprisingly, 97% (n=27) of survey respondents strongly agreed (93%) or agreed (4%) that the multicultural mix of the group added to the quality of the group. The majority (89%, n=25) strongly agreed (86%) or agreed (3%) that members of the Lockridge Walking Group were able to freely express dissenting views while 7% (n=2) of respondents strongly disagreed with this (Bayly & Bull, 2001). Walking group members became more engaged in the community - they participated in local government consultations regarding services and facilities, fundraising for charities and planting trees (Bayly & Bull, 2001). The health centers where walking group members met before walks also became welcoming places and part of community life. There was a strong feeling among the key informants that the group now has several functions. The physical activity aspect was the initial reason for the formation of the walking group, but later on the social setting created the unique strength of the group. Some participants

referred people to join the group because there was a good level of social support and caring from other group members. As one key informant noted (Bayly & Bull, 2001):

I mean if a doctor is referring, he tends not to think as much of the social, but he wants his patient to be active... so the physical activity component is important, but definitely doesn't stand alone. That nurturing, that belonging, that creating interest and a sense of purpose in some people's minds...It seems that a number of people that have become involved in the group over time, have got to the group by being at a point in their life where they needed something, they had a need of their own...that was much more than physical activity... (p. 81)

The majority (79%, n=22) reported that being a member of the Lockridge Walking had affected their interest in being involved in community groups and activities. Of those, all (n=22) indicated they had a greater interest in being involved in community groups and activities than they had before their involvement with the Lockridge Walking.

Clearly, Lockridge Walking group promoted tightly connected society. The intervention enhanced reciprocity, acceptance of diversity, sense of connectedness, civic involvement, and participation in other networks. Nonetheless, the small sample size (n <30) makes the study less robust in terms of its external validity. To this effect, teasing out the key attributes that made Lockridge Walking group would be critical when modifying the intervention at other places. The investigators believed that the key factors were support from local government and the local health service, on-going collaboration between these organizations to support the walking group, provision of local facilities for meeting and socializing, the skills and networks of the leader, and the informality' of the group structure (Bayly & Bull, 2011).

Another successful intervention heavily influences the upstream level (i.e., social structure) to influence creation of social capital. A two-year community based physical activity promotion intervention conducted in Australia, also shows the importance of the role of the local council and health promotion unit (Wen et al., 2002). ‘Concord, A Great Place to be Active’ was a community based multi-strategic health promotion intervention implemented from 1997 to 1999 in Concord area of Sydney. The primary aim of the intervention was to increase the physical activity level among women aged 20-50 years. A key feature of this intervention was a partnership between Concord Council (the local government) and the Central Sydney Health Promotion Unit. Focus groups with women and interviews with key informants were conducted to inform the development of the intervention. Most importantly, the entire Concord community was involved in the project. In addition to organizing walking groups, the local council sponsored community walking events, constructed maps of walking itineraries, mobilized community networks and resources, and conducted an awareness campaign for physical activity, its associated health benefits and pleasant locations for walking in the area. Partnerships were formed between different council departments and government agencies, leading to improved communication channels. The community-wide campaign resulted in health and physical benefits for women in the walking groups as well as for women in the general community. The sense of community in Concord was strengthened, local resources and facilities (e.g., parks, walking tracks) were improved, and the capacity of the local council to support and promote physical activity in the community was augmented. Wen et al. (2002), in their qualitative analysis, indicated the success of the project in building council’s commitment and skills to implement a community physical activity project. The promotion of the project through the local media, school newsletters and printed materials (magnets, project newsletter, banners and t-shirts)

was also perceived as the critical factor. The project contributed to the positive communication between community and the council:

In terms of the project I see it applying to the whole of the community at the end of the project now. We can take what we learned and try to foster it across the whole community (p.132)

At a policy level, council made number of changes in the course of the project. A direct result of one of the key project initiatives was the placement of signage for all foreshore walks. Another key change was the council's creation of a new position of Manager of Recreational Services. A Council Events Committee was established and funded as a direct result of the success of the project's community events:

[the] ... creation of manager of recreation service ... it's OK to have the open space, but we also need to have people to start to facilitate projects (p.133)

Indeed, 'Cocord, a Great Place to be Active' showed smashing success in intersectional collaboration and was an effective community level intervention to promote social capital via physical activity. Nonetheless, Wen et al. (2002) noted that some caution is necessary in interpreting the results of the quantitative study as they did not have a control group in their pre- and post- intervention survey. Lastly, Wen et al. (2002) pointed out several issues that were raised which could be improved in future projects. Clarifying the roles of the partners, funding arrangements, sponsorship and allocation of human resources at the outset of the project were imperative. In addition, establishing relevant committees and reporting to council committees were essential strategies to ensure the council's ownership of the project.

Of note, all studies reviewed thus far conducted the intervention primarily to promote physical activity, while the social setting being the core characteristics of the intervention.

Therefore, most published articles reported enhancement in social capital as a secondary outcome. There is some evidence, however, showing that participating in walking groups leads to more satisfying social contacts although there may be no changes to physical activity participation. For example, Watson et al. (2005) evaluated a pram walking program for new mothers in Western Sydney. The program was of a prospective cohort design and consisted of an intervention group and a control group, where intervention mothers participated in a pram walking group, while control group mothers were placed on a waiting list. The pram walking intervention had no significant effect on the proportion of women undertaking sufficient physical activity and there was no significant difference between the intervention and control group with respect to physical activity participation. Despite this, intervention group mothers reported being more satisfied with their social contact than control group mothers at the 6-month follow-up (Watson et al., 2005). Qualitative feedback indicated that women who attended the walking group valued the meetings and had formed new friendships with other group members.

There was another qualitative research study done by Priest (2007) in rural area of the UK where investigators examined participants' experience of a mental health day service walking group in relation to psychological benefits. Fourteen participants first visited the service as part of their induction into a local Community Mental Health Team. There were no inclusion criteria. Participants reported problems hearing voices, trauma, using alcohol and distressing living conditions. Ages ranged from 26 to 47. Interviews lasted from 15 and 90 minutes. Data were collected via participant observation, interviews and a group discussion, and analyzed using a grounded theory approach.

An important ingredient of the walking group was the experience of being part of something. Participant reported:

I do go walking but I don't go walking much out of town because it heightens my feelings of isolation which I don't get in a group (p. 45)

Sometimes, the physical presence of others was most important:

Even if you don't talk to people sometimes, at least you're with them (p. 45)

For James, the group setting was most important:

It's just being a part of something really ...is very important . . . it wouldn't matter where you went, or how you did it really (p. 45)

Being able to connect in various ways allowed people to experience acceptance and a sense of perspective. Priest (2007) noted that these attributes are profoundly important bearing in mind feelings of vulnerability, isolation and distress. This set the foundation for stronger feelings of connecting with each other, which Katie identified in terms of having a common purpose:

...with other people who are struggling too, we walk side by side, some common aim ahead of us all, just to get to the end of the walk (p. 45)

Nicola expressed even deeper feelings of connecting in the sense of caring others:

...the people I know in the group . . . I actually do care about them (p. 45)

As shown, many of the comments documented in Priest's work directly contribute to strengthening social ties, and it does add detailed nuance to quantitative research. Nonetheless, in terms of incorporating Priest's work into group-based physical activity for community development, several aspects need to be addressed and revised. First off, the primary purpose of the intervention was not walking. It is not clear whether the favorable outcome of the study is stemming from outdoor environment or social setting. In addition, participants in the study all had mental illness, and so the ability to generalize the findings of this study to a normal population may be limited.

V. Conclusion

Key Factors for Successful Interventions to Promote Thriving Community

Taken together, the following elements have been identified as important for developing successful and sustainable group-based physical activity interventions that make positive contributions to the thriving community:

1. Having walking group leaders who are well-trained, organized, enthusiastic, understanding, caring and encouraging of group members. Providing walking group leaders with training and support, so that walking groups may be self-reliant and empowered to manage their own activities (Fisher et al., 1998; Bayly & Bull, 2001).
2. Taking a partnership approach and encouraging collaboration between organizations (government agencies, local government, community organizations and businesses) to ensure that the walking group is supported (Fisher, 1998; Wen et al., 2002; Bayly & Bull, 2001)
3. Having a local facility (spatial area) to meet before and after the walk. This also promotes the presence of the walking group in the community and develops its identity (Fisher, 1998; Wen et al., 2002; Bayly & Bull, 2001).
4. Being part of a larger program so that walking group members have a sense that they are part of a bigger project and identify with the broader program (Fisher et al., 1998; Wen et al., 2002).
5. Identifying opportunities for participating in other social and community activities; e.g. fundraising for charity (Bayly & Bull, 2001).

6. Intermittently survey or hold focus groups with participants and stakeholders for feedback and suggestions regarding walking group activities and related events (Wen et al., 2002).

Limitations and Future Directions

It is noteworthy that much of the evidence relating to physical activity and social capital is based on cross-sectional data and therefore, causal directions cannot be established from such findings. Meaning, two interpretations could be possible: 1) people are engaging in less physical activity because they lack social support, social structure, or positive peer pressure to engage in physical activity, or 2) group-based physical activity programs provide a platform where a community could invest social capital. Given the excess concern with obesity and diabetes, published articles tend to focus the primary outcome on physical activity more so than the aspect of social networks.

Research shows that people tend to be physically inactive in a unsafe community. Adults are more likely to engage in physical activity when they perceive their neighborhoods to be safe (Harrison, Gemmell & Heller, 2007; Suminski, Poston, Petosa, Stevens, & Katzenmoyer, 2005). However, Roman & Chalfin (2007) reported that having a sense of community cohesion and collective efficacy partially lessens fears about neighborhood crime and safety, suggesting a somewhat mitigating effect of social capital.

Theories are simple but phenomena are complex. Given the current epidemic in obesity and diabetes, physical activity appears to stand out as a more attractive outcome variable that researchers aim to promote, while social setting functioning as a successful mean to sustain physical activity. Although it is difficult to articulate the causal directions, it appears that both

have positive impact on our well-being: 1) physical activity in social setting is successful and sustainable physical activity promotion which adds value to our physical and mental well-being, and 2) such platform has potential to create thriving community with new social structure, strengthened collective efficacy.

Measurement appears to be an issue when consolidating past research in social capital. Variety of evidence from different disciplines associated elements of social capital to crime prevention, civic institutional performance, to population longevity, and well-being. However, many terms such as social ties, social relationship, and social cohesions are used interchangeably in the literature. I believe precise definition of terminology as well as operational construct may facilitate smooth communication within and between different academic disciplines. Furthermore, positive psychology should critically inquire whether positive relationships, social well-being, and community well-being merely represent 'old wine in new bottles' or adds true value to humans' optimal functioning. On a related note, Lochner et al (1999), noted measurement units in social capital research should not be individuals but units in larger level such as neighborhoods, states, or even whole countries. In other words, a community-based interventions should measure the characteristics of the group as a whole rather than individuals.

In conclusion, it is apparent that physical activity has the potential to facilitate community building and strengthening by encouraging greater participation and contributing to the social capital in communities. The literature shows that group-based walking interventions have shown substantial increase in social capital that includes sense of connectedness, collective efficacy, cooperation, reciprocity, collective identity, trust, social engagement, acceptance of other groups, and improved social infrastructures in the community. Key factors for successful interventions emerged were having competent walking group leader, strong partnership between government

and community, having a local facility, being part of a larger program, identification of opportunities for participation in community activities (e.g. charity), and receiving constant feedback from participants and stakeholders. As most study reviewed were cross-sectional study, it is difficult to infer causal direction. Therefore, community-based walking intervention and social capital may influence each other to strengthen adherence to the walking regimen while engendering social capital in the community. These intervention data suggest that the direction of the relationship may be through promoting physical activity to increasing social capital.

Therefore, in practical standpoint, it may be worthwhile to measure two constructs equally.

Specifically, policy makers and community organizers could design a community level walking intervention that could promote both physical and mental well-being as well as social capital within the community. At a theoretical standpoint, future research in mechanistic pathway articulating the causal link between community level intervention and social capital will allow policy makers and community organizers to design more nuanced intervention with minimal cost.

References

- Aristotle. (1981). *The politics* (rev. ed.). London: Penguin.
- Bayly, L., & Bull, F. C. (2001). *How to build social capital: a case study of an enduring community walking group*. Eastern Perth Public and Community Health Unit.
- Ben-Ari, Y., Gaiarsa, J. L., Tyzio, R., & Khazipov, R. (2007). GABA: a pioneer transmitter that excites immature neurons and generates primitive oscillations. *Physiological Reviews*, *87*(4), 1215-1284.
- Boström, P., Wu, J., Jedrychowski, M. P., Korde, A., Ye, L., Lo, J. C., ... & Spiegelman, B. M. (2012). A PGC1-*[agr]*-dependent myokine that drives brown-fat-like development of white fat and thermogenesis. *Nature*, *481*(7382), 463-468.
- Boyd, R., & Richerson, P. J. (2009). Culture and the evolution of human cooperation. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *364* (1533), 3281-3288.
- Carr, A. (2011). *Positive psychology: The science of happiness and human strengths*. Routledge.
- Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Reports*, *100* (2), 126.
- Coleman, J. S., & Coleman, J. S. (1994). *Foundations of social theory*. Harvard University Press.
- Community Builders (2007). What is community building?, Retrieved 20th July, 2014, from <http://www.communitybuilders.nsw.gov.au/>
- Compton, W. C. (2005). *Introduction to positive psychology*. Australia: Thomson/Wadsworth.

- Cotman, C. W., Berchtold, N. C., & Christie, L. A. (2007). Exercise builds brain health: key roles of growth factor cascades and inflammation. *Trends in neurosciences*, 30 (9), 464-472.
- Crockford, C., Deschner, T., Ziegler, T. E., & Wittig, R. M. (2014). Endogenous peripheral oxytocin measures can give insight into the dynamics of social relationships: a review. *Frontiers in behavioral neuroscience*, 8.
- Darcy, S., Maxwell, H., Edwards, M., Onyx, J., & Sherker, S. (2014). More than a sport and volunteer organisation: Investigating social capital development in a sporting
- Darwin, C. (1871). *The Descent of Man and Selection in Relation to Sex* (New York: Appleton).
Cerca con Google.
- Dibble, L. E., Addison, O., & Papa, E. (2009). The effects of exercise on balance in persons with Parkinson's disease: a systematic review across the disability spectrum. *Journal of Neurologic Physical Therapy*, 33 (1), 14-26.
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American psychologist*, 55(1), 34.
- Durkheim, E. (1897, 1997). *Suicide: a study in sociology*, ed. Simpson, G. (tr. Spaulding, J.A., and Simpson, G., 1951) New York: Free Press.
- Durkheim, E. (2012). *The elementary forms of the religious life*. Courier Dover Publications.
- Egan, M. F., Kojima, M., Callicott, J. H., Goldberg, T. E., Kolachana, B. S., Bertolino, A., ... & Weinberger, D. R. (2003). The BDNF val66met polymorphism affects activity-dependent secretion of BDNF and human memory and hippocampal function. *Cell*, 112(2), 257-269.
- Fisher, K. J., Ford, C., Abernethy, P. J., Ritchie, C. B., Miller, R., & Hutchins, C. A. (1998). Just walk it: Enhancing community participation in physical activity. *Health Promotion Journal*

of Australia: Official Journal of Australian Association of Health Promotion Professionals,
8 (2). 140-4

Fowler, J. H., & Christakis, N. A. (2008). Dynamic spread of happiness in a large social network: Longitudinal analysis over 20 years in the Framingham heart study. *BMJ: British Medical Journal*, 337: a2338

Fox, K. R. (1999). The influence of physical activity on mental well-being. *Public health nutrition*, 2(3a), 411-418.

Fukuyama, F. (2001). Social capital, civil society and development. *Third world quarterly*, 22 (1), 7-20.

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology*, 9 (2), 103.

Giddens, A., *Sociology 5th edition*, Polity Press

Grant, A. (2013). *Give and take: A Revolutionary Approach to Success*. Hachette UK.

Gutkowska, J., Paquette, A., Wang, D., Lavoie, J. M., & Jankowski, M. (2007). Effect of exercise training on cardiac oxytocin and natriuretic peptide systems in ovariectomized rats. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*, 293(1), R267-R275.

Haidt, J. (2003). Elevation and the positive psychology of morality. *Flourishing: Positive Psychology and the Life Well-lived*, 275, 289.

Haidt, J. (2006). *The Happiness Hypothesis: Finding Modern Truth in Ancient Wisdom*, Basic Books

Haidt, J. (2007). The new synthesis in moral psychology. *Science*, 316 (5827), 998-1002.

Haidt, J., Seder, J. P., & Kesebir, S. (2008). Hive psychology, happiness, and public policy. *The Journal of Legal Studies*, 37 (S2), S133-S156.

Harrison, R. A., Gemmell, I., & Heller, R. F. (2007). The population effect of crime and neighbourhood on physical activity: an analysis of 15,461 adults. *Journal of epidemiology and community health*, 61 (1), 34-39.

Hefferon, K. (2013). *Positive Psychology and the Body: The Somatopsychic Side To Flourishing: The Somatopsychic side to flourishing*. McGraw-Hill International.

Hew-Butler, T., Noakes, T. D., Soldin, S. J., & Verbalis, J. G. (2008). Acute changes in endocrine and fluid balance markers during high-intensity, steady-state, and prolonged endurance running: unexpected increases in oxytocin and brain natriuretic peptide during exercise. *European Journal of Endocrinology*, 159 (6), 729-737.

Hill, L. E., Droste, S. K., Nutt, D. J., Linthorst, A. C. E., & Reul, J. M. H. M. (2010). Voluntary exercise alters GABAA receptor subunit and glutamic acid decarboxylase-67 gene expression in the rat forebrain. *Journal of Psychopharmacology*, 24 (5):745-56

Hunsberger, J. G., Newton, S. S., Bennett, A. H., Duman, C. H., Russell, D. S., Salton, S. R., & Duman, R. S. (2007). Antidepressant actions of the exercise-regulated gene VGF. *Nature medicine*, 13 (12), 1476-1482.

Islam, M. K., Merlo, J., Kawachi, I., Lindström, M., & Gerdtham, U. G. (2006). Social capital and health: Does egalitarianism matter? A literature review. *International journal for equity in health*, 5(1), 3.

Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in Sports*. Human Kinetics.

James, W. (1983). *Talks to Teachers on Psychology and to Students on Some of Life's Ideals* (Vol. 12). Harvard University Press.

- Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*(38), 16489-16493
- Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health, 87*(9), 1491-1498.
- Kawachi, I., Subramanian, S. V., & Kim, D. (2008). *Social Capital and Health* (pp. 1-26). Springer New York.
- Kim, E. S., Park, N., & Peterson, C. (2013). Perceived neighborhood social cohesion and stroke. *Social Science & Medicine, 97*, 49-55.
- Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005). Oxytocin increases trust in humans. *Nature, 435*(7042), 673-676.
- Light, R. J. (2001). *Making the most of College: Students Speak their Minds*. Harvard University Press.
- Lochner, K., Kawachi, I., & Kennedy, B. P. (1999). Social capital: a guide to its measurement. *Health & Place, 5* (4), 259-270.
- MacDonald, K., & MacDonald, T. M. (2010). The peptide that binds: a systematic review of oxytocin and its prosocial effects in humans. *Harvard Review of Psychiatry, 18* (1), 1-21.
- Melchert, N. (2002). Aristotle: The reality of the world. The good life. *The Great Conversation: A Historical Introduction to Philosophy, 4*, 186-198.
- Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology, 75*(5), 1333.

- Mutrie, N., & Faulkner, G. (2004). *Physical Activity: Positive Psychology in Motion*. In P. A. Linley & S. Joseph (Eds.), *Positive Psychology in Practice* (pp. 146-164). Hoboken, NJ: Wiley.
- Nelson, G., & Prilleltensky, I. (2005). *Community Psychology: In Pursuit of Liberation and Well-being*. Palgrave Macmillan.
- Nicholson, M., & Hoyer, R. (Eds.). (2008). *Sport and Social Capital*. Routledge.
- Nicholson, M., Brown, K., & Hoyer, R. (2014). Sport, Community Involvement and Social support. *Sport in Society*, 17 (1), 6-22.
- Norris, R., Carroll, D., & Cochrane, R. (1992). The effects of physical activity and exercise training on psychological stress and well-being in an adolescent population. *Journal of psychosomatic research*, 36(1), 55-65.
- Oaklander, M. (2013, June). Easy Ways To Increase Oxytocin Levels. *Prevention* . Retrieved July 20th 2014, from <http://www.prevention.com/sex/sex-relationships/easy-ways-increase-oxytocin-levels?s=8>
- Park, G. (2007, May 8). Physical Activity and the Good Life. *Positive Psychology News Daily*. Retrieved from <http://positivepsychologynews.com/>
- Pawelski, J. (2013). Toward a new generation of positive interventions. . Bb, Penn Courseweb (MAPP602): Positive Psychology Center, University of Pennsylvania.
- Pawelski, J. O., & Moores, D. J. (Eds.). (2012). *The Eudaimonic turn: Well-being in Literary Studies*. Fairleigh Dickinson.
- Pepping, G. J., & Timmermans, E. J. (2012). Oxytocin and the biopsychology of performance in team sports. *The Scientific World Journal*, 2012.

- Physical Activity Guidelines Advisory Committee. (2008). Physical activity guidelines advisory committee report, 2008. *Washington, DC: US Department of Health and Human Services, 2008*, A1-H14.
- Priest, P. (2007). The Healing Balm Effect Using a Walking Group to Feel Better. *Journal of Health Psychology, 12*(1), 36-52.
- Prilleltensky, I., & Prilleltensky, O. (2007). *Promoting well-being: Linking personal, organizational, and community change*. John Wiley & Sons.
- Putnam, R. D. (2000). *Bowling alone: The Collapse and Revival of American Community*. Simon and Schuster.
- Putnam, R. D., Leonardi, R., & Nanetti, R. Y. (1994). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton university press.
- Rath, T., Harter, J., & Harter, J. K. (2010). *Wellbeing: The Five Essential Elements*. Gallup Press.
- Resnick, S., Warmoth, A., & Serlin, I. A. (2001). The humanistic psychology and positive psychology connection: Implications for psychotherapy, *Journal of Humanistic Psychology, 41* (1), 73-101.
- Roberts, L. D., Boström, P., O'Sullivan, J. F., Schinzel, R. T., Lewis, G. D., Dejam, A., ... & Gerszten, R. E. (2014). β -Aminoisobutyric Acid Induces Browning of White Fat and Hepatic β -Oxidation and Is Inversely Correlated with Cardiometabolic Risk Factors. *Cell metabolism, 19*(1), 96-108.
- Rolland, Y., Abellan van Kan, G., & Vellas, B. (2008). Physical activity and Alzheimer's disease: from prevention to therapeutic perspectives. *Journal of the American Medical Directors Association, 9* (6), 390-405

- Roman, C. & Chalfin, A. (2007) The Impact of Fear of Crime on Walking Outdoors: How Gang Territories, Drugs, Violence, and Disorder Discourage Active Living. *Active Living Research Conference*; 2007 February 22-24; Colorado
- Schwartz, H. A., Eichstaedt, J. C., Dziurzynski, L., Kern, M. L., Seligman, M. E., Ungar, L. H., . . . Stillwell, D. (2013). Toward personality insights from language exploration in social media. *2013 AAAI Spring Symposium Series*,
- Seligman, M. E. (2008). Positive health. *Applied Psychology*, *57*(s1), 3-18.
- Seligman, M. E., & Csikszentmihalyi, M. (2000). *Positive Psychology: An introduction* (Vol. 55, No. 1, p. 5). American Psychological Association.
- Seligman, Martin EP. *Flourish: A visionary new understanding of happiness and well-being*. Simon and Schuster, 2012.
- Simpson, E. A., Sclafani, V., Paukner, A., Hamel, A. F., Novak, M. A., Meyer, J. S., ...& Ferrari, P. F. (2014). Inhaled oxytocin increases positive social behaviors in newborn macaques. *Proceedings of the National Academy of Sciences*, *111* (19), 6922-6927.
- Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology*, *65* (5), 467-487.
- Sjögren, T., Nissinen, K. J., Järvenpää, S. K., Ojanen, M. T., Vanharanta, H., & Mälkiä, E. A. (2006). Effects of a physical exercise intervention on subjective physical well-being, psychosocial functioning and general well-being among office workers: A cluster randomized-controlled cross-over design. *Scandinavian Journal of Medicine & Science in Sports*, *16*(6), 381-390.

- Suminski, R. R., Poston, W. S. C., Petosa, R. L., Stevens, E., & Katzenmoyer, L. M. (2005). Features of the neighborhood environment and walking by US adults. *American Journal of Preventive Medicine, 28* (2), 149-155.
- Taylor, H. L., Jacobs Jr, D. R., Schucker, B., Knudsen, J., Leon, A. S., & Debacker, G. (1978). A questionnaire for the assessment of leisure time physical activities. *Journal of Chronic Diseases, 31* (12), 741-755.
- Thakker-Varia, S., Krol, J. J., Nettleton, J., Bilimoria, P. M., Bangasser, D. A., Shors, T. J., ... & Alder, J. (2007). The neuropeptide VGF produces antidepressant-like behavioral effects and enhances proliferation in the hippocampus. *The Journal of Neuroscience, 27* (45), 12156-12167.
- Uslaner, E. M. (1999). Democracy and social capital. *Democracy and trust, 121-150*.
- Watson, N., Milat, A., Thomas, M., Currie, J., Gorman-Brown, C., Phillips, C., ... & Jarman, P. (2005). The pram walking project report. *Sydney (AUST): Sydney West Area Health Service*.
- Wen, L. M., Thomas, M., Jones, H., Orr, N., Moreton, R., King, L., ... & Bauman, A. (2002). Promoting physical activity in women: evaluation of a 2-year community-based intervention in Sydney, Australia. *Health Promotion International, 17* (2), 127-137.
- Wilson, D. S., & Wilson, E. O. (2007). Rethinking the theoretical foundation of sociobiology. *The Quarterly review of biology, 82* (4), 327-348.
- Wilson, E. O. (1980). *Sociobiology, 1975. Cambridge: Harvard UP*.
- Wrann, C. D., White, J. P., Salogiannis, J., Laznik-Bogoslavski, D., Wu, J., Ma, D., ... & Spiegelman, B. M. (2013). Exercise induces hippocampal BDNF through a PGC-1 α /FNDC5 pathway. *Cell Metabolism, 18*(5), 649-659.