Physical Activity and its Influence on Health
at Country Crossing Park

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Health is more than the absence of disease or illness, it is a combination of physical, mental and social well-being. There are many factors that contribute to a person's health. Because physical activity is a major influence on health, physical activity can be used to experiment on health. Parks have become an important setting for adults to meet their physical activity needs. There is a general agreement that parks play a role in encouraging health to individuals and societies. According to County of Los Angeles Public Health, Pomona has only 1.8 park acres per 1,000 people. This is very small compared to the 86 park acres per 1,000 people for Los Angeles County. Although there is a small amount of available parks to Pomona residents, can there still be health benefits to the people that do have access to parks. This will be tested on the users of Country Crossing Park in Pomona, California through observation and interviews.

Many people, from multiple fields of study are trying to figure out the relationship between nature and health. There have been mixed results among studies on the relationship between parks and their effects on health, most likely due to using different methods. These studies may show mixed results because they do not distinguish between parks that encourage activity and those that do not. The common understanding is that nature offers mental and physical health that can not be found in other places. Although it is not fully recognized yet, nature is important to health, well-being and development.

More and more people are living in cities which are often segregated from nature, which can be detrimental to health. Parks offer accessible forms of nature to people trapped within a city. Parks play a role in aiding people's health and spirituality. According to the World Health Organization, one quarter of adult diseases around the world and one third of children diseases are a result of modifiable environmental conditions. Humans have been thought of as
separate from nature and have profound impacts on the environment, but regardless humans are part of and dependent on the world’s ecosystem. As put by in *Healthy Parks, Healthy People*, “Nature’s goods and services are the ultimate foundations of life and health, even though in modern societies this fundamental dependency may be indirect, displaced in space and time, and therefore poorly recognized”\(^3\). With the urban environment growing rapidly around the world, parks play a big part in providing nature due to the fact that they are more accessible\(^3\).

Physical Activity influence on Physical Health

The recommended amount of medium intensity physical activity to see its benefits is 30 minutes minimum at least five days per week\(^9\). Not even half of the American Public regularly engage in health protecting physical activity\(^5\). Being physically inactive is a modifiable risk factor in many diseases including cardiovascular disease, diabetes, certain cancers such as colon and breast, obesity, hypertension, and bone and joint disease\(^8\). Pomona has higher rates of childhood obesity, premature death from heart disease and stroke than the rest of Los Angeles County\(^11\). According to Pomona Community Health Center, the Pomona service area death rate for diabetes is double that of the state of California\(^12\). Pomona also has higher rates of obesity, heart disease and diabetes\(^12\). Physical inactivity, as a modifiable risk factor is higher than all other factors of preventing diseases. Not only does physical activity prevent many diseases, it has been found to reduce the risk of a premature death. The relationship between health and physical activity has been shown that those who are most physically active have the lowest risks of many deadly health problems. Physical activity is associated with physiological effects that are wide ranging, and affect multiple systems of the body. Physical activity is a modifiable factor of energy expenditure which affects energy balance\(^9\). There are many physiological effects from physical activity, which includes increasing a person’s resting metabolic rate, alters
body composition through fat mass decrease and a lean mass increase. Resting blood pressure is reduced and the amount of blood that coronary arteries can carry is increased through physical activity. Blood vessel lining and the body's ability to break down blood clots is also benefited through physical activity. In addition, physical activity also brings beneficial changes to blood glucose, immunological and neurological factors. To a certain extent, physical activity protects people from multiple chronic health problems. Physical activity has the capacity to reduce the risk of type 2 diabetes by 33-50 percent to those who are at risk of the disease. The more physical activity a person does, the less at risk they are for cardiovascular disease. The risk of multiple cancers have been shown to be reduced with physical activity. The greatest improvements in health from physical activity are shown when physically unfit people become physically active. The risk of these health problems starts at childhood and increases with age, thus healthy programs should be targeted towards all ages.

Chronic Alcohol consumption was reported 4.9 percent of adults in the Pomona service area, but only 3.9 percent in Los Angeles County. According to Healthy Parks, Healthy People, “It has been reported that modern people are experiencing a spiritual famine and that alcohol, food, and drug addictions are futile attempts to fill the spiritual emptiness that has arisen from loss of contact with nature”. People are beginning to look at parks for more than sports and leisure but for their health impacts on individuals and society.

Physical Activity influence on Mental Health

Much of the research that has been done in regard to mental health and parks has focused on depression and depressive disorders. Over 6 percent of Pomona adults reported anxiety and stress. About 9.7 of Pomona adults were diagnosed with depression. It is estimated that depressive disorders will have the largest share of the disease burden in the
developed world and second largest in the world by 2020\(^3\). People are focusing more on mental disorders because of the increasing life expectancy and aging populations. There are a number of reasons that lead to mental disorders “including the polarities of high levels of urbanization, crowding and social isolation; globalization of economies, communication and information; human, social, and economic epidemics related to depression, substance abuse and violence; the break-up of families; and perhaps an almost complete disconnection from the natural world”\(^3\). Mental disorders are also related to other mental and physical disorders, leading to more financial and social costs. Much of the factors that lead to mental disorders can be improved with contact with nature, which would decrease the number of other diseases. Research has shown that depression can be equally reduced using medication and physical activity. Physical activity also has the ability to improve overall mood and self esteem.

Physical activity may be an important factor in managing mild to moderate mental health disorders, particularly depression and anxiety. Individuals with depression tend to be less physically active than individuals without depression. It has been shown that physical activities reduce symptoms of depression significantly, but it has not been shown that habitual physical activity has not been shown to prevent the development of symptoms of depression. Physical activity gives benefits equivalent to meditation or relaxation to anxiety symptoms and panic disorders. With overall beneficial effects to mental health, physical activity should be promoted as a simple, economic and effective means of therapy. Parks provide an arena for such mentally therapeutic physical activity\(^9\).

Some individuals may encounter barriers to physical activity. This includes psychological barriers such as poor body image or confidence and absence of instantaneous results. Barriers can also be created through personal factors, including lack of time, money or
health. Environmental factors also create barriers to physical activity, for example a lack of active transport options. However, the barrier that is important is a lack of available parks. Not having places to be physically active, such as parks may be detrimental to health.

Model Experiment

An article titled *Contribution Of Public Parks To Physical Activity* attempted to understand the use and extent of physical activity in eight parks of Los Angeles minority communities using observation and other methods. This study focused on the high numbers of minorities and high levels of poverty around the parks. There was a range of 24,778 and 75,292 people living within one mile of the park boundary.

The experimenters interviewed park users as well as residents within two miles of the parks, systematically observed and used 2000 Census bureau information. Park activities were directly observed using the System for Observing Play and Recreation in Communities. At the parks, “all potential areas for physical activity (i.e., target areas) were established with respect to location, size, and boundaries by mapping each park. A total of 165 areas were observed (about 20 areas per park), including grassy areas, multipurpose fields, playgrounds...”\(^5\). One hour observations were made four times a day, starting at 7:30am, 12:30pm, 3:30pm and 6:30pm. Areas were observed in the same order each time to record the activity type and intensity as either sedentary, walking or vigorous. In addition, they recorded other conditions including if it was “dark, accessible, usable, provided with supervision or equipment, and if the activity was organized”\(^5\). About 713 park users and 605 nearby residents, over the age 18, between the hours of 7:30am and 7:30pm. Half of the respondents were stationary and half were active in the target areas that were the busiest and least busy. Households, selected at random for nearby residents to respond to interviews.
The parks had some common characteristics and some characteristics that were not so common. Each week an average of 1849 people were observed, ranging from 524 to 4628 each week, representing 1.1 to 6.7 percent of the population within one mile. About 62 percent of the park visitors were male, except at the playgrounds and tracks, where there were equal percentages. The estimated ages of the visitors were also recorded, and it was found that less than 5 percent were over 65, 43 percent were adults, 33 percent were children and 19 percent were adolescents. The activities that were recorded the most was picnicking, playing basketball, spectating organized sports, playing soccer and using playground equipment. The park facilities went unused for approximately 57 percent of the observed time. The facilities were used more often later in the day than the morning, with exception of the track. The results of the activity level observations were 66 percent sedentary, 19 percent were walking and 16 percent were exercising vigorously. Multipurpose fields were more likely to have walking or vigorous activity. It was found that males were close to two times likely to be engaged in vigorous activity. The interviews of both the residents and park users indicated that the park as the most common place for exercise, however more park users than residents reported using the park several times per week. According to the article, “The most common park activity among both residents and park users was sitting (72%), followed by walking (59% of park users vs 65% of residents; P=.07) using the playground (40%)”\textsuperscript{5}. The closer a person lived to the park, the more likely they were to visit the park. Only 13 percent of the park visitors lived more than one mile away from the park. Also, residents living closer to the park reported more leisurely exercise than residents living farther away. A person living at least one mile away from a park was four times more likely to visit a park at least once a week and has 38 percent more exercise sessions.
This article agrees that parks provide a place for people to exercise at or walk to, especially for minority groups. A person’s proximity to a park influences the frequency of exercise and park use. There were people living close to the park that never used the park, but there were many more living farther away that never used it. The authors suggest that all residents should have a park within one mile of their residences, that provides structured activities. The conclusion of this article is that the “primary finding that residential proximity to a park was the most robust predictor of both park use and self-reported leisure exercise in urban, minority communities should be noted by urban planners and officials responsible for ensuring safe and healthy neighborhoods. Facilitating larger numbers of people being physically active is critical for improving overall population health.”

Country Crossing Park Research

Why did I choose this Park?

I decided to research only one park due to limited resources. If I had limitless time and help, I would have researched all the parks in Pomona for their health benefits related to physical activity in parks. However, with such limitations, I decided to focus my research on one park. I chose Country Crossing Park for several reasons. First, I chose this park because it is not a far distance from Cal Poly Pomona. This would be convenient to visit multiple times, which my research would require. Second, I chose this park because it is in an apparently safe park. There was nothing signaling danger at this park. I would not want to be visiting a park multiple times, alone that feels dangerous. In other words, I chose this park because it was of high quality. Finally, I chose this park because of its size. This park has a high potential for physical activities because of its adequate size.

Evaluation of Country Crossing Park
I decided to begin my research by evaluating the park. The article *Association of park size, distance, and features with physical activity in neighborhood parks*, used the Environmental Assessment for Public Recreation Spaces (EAPRS) tool. This article experimented park use in newly developed residential units. This type of experiment would take ample time to begin and record data, also I am unaware of any new residential developments in Pomona. Although I did not follow this experiment, I did take their method of evaluating park with the EAPRS tool, which I found online. This article used the EAPRS tool for ranking and measuring the park features. I used this tool as more of a guideline for observation rather than as a tool for quantifying.

Using the EAPRS tool, I effectively assessed Country Crossing Park. This park has multiple access point. The main access point, and the one that I used was the parking lot. This is a logical point of entry for people that drive to visit the park. There is also accessibility to the park through a neighborhood. Opposite of the playground is a neighborhood cul-de-sac which is open to the park. Also, this park has a long, narrow stretch of park, with a paved trail running along a busy street. Across the street from Village Loop Rd are many residential neighborhoods. Many of these residents have the option of visiting the park. Although this is a fairly busy street, there is a four way stop where residents can cross the street into the park. The park is not fenced in, the only fences bordering the park was those of the backyards that were backing the park. The bordering aesthetics of the park are also a factor to the EAPRS tool. Country Crossing Park is considerably hilly. Much of the perimeter abuts neighborhood backyards, which are elevated from the park. Hills leading up to the backyards are highly vegetated. There is also an open field in this park which is parallel to the street. Between the field and the street is a hill. I speculated that this hill was intended to prevent soccer balls from rolling into the street. The landscape of the park consisted of highly vegetated hillsides. Much of the park had grassy hills
and evenly spaced trees. The landscape of the park is designed, with little natural settings. The park had many open spaces, including the soccer field and the rolling hills. The paths at the park were paved and had lighting, trees, and hand rails along side. The paths had a continuous surface with no major cracks. There are picnic tables near the restroom and under a covered gazebo, by the playground.

One way to get a persons opinion without asking is through online reviews. Seeing what people think about the park without asking biased questions is important. This is the only persons view that reviewed the park on Yelp.com:

“I go jogging here with one of my friends every now and then. It has a nice scenic trail route. A lot people seem to go here to walk the trails early in the morning, but it's not crowded at all. Nice place to workout, go for a run or just walk the trail and enjoy the scenery.”

Although this is only one persons opinion, but it is on the internet and can influence the opinion of the many that see it.

Observation of Country Crossing Park

Many of the experiments that I have read used direct and systematic observation to quantify physical activity in parks. I tried to follow the observation procedure of Thomas L. McKenzie et al in *Contribution of Public Parks to Physical Activity*. I began my observation at the same place, and recorded the starting time as well as the weather because weather can influence a persons activity in the park. I had the same route through the park each time, working my way up the hill to the playground, and then back down the hill following the path through the parkway. Each observation, I would recorded the number of people because some people would come in groups. I would then record the activity the person is doing at the time of observation. If I saw a person a second time, I would not count them a second time, even if they were doing a different activity a second time. I then recorded each persons estimated age range;
whether they were a child, adolescent, adult or elder. I would also record a persons gender; whether they were male or female. *Contribution of Public Parks to Physical Activity* also recorded a persons race/ethnicity but I mindfully decided not to record this. I did not feel comfortable putting people in racial categories that I did not know for sure.

Living in near the park, where visiting more often would be convenient, would give an advantage. The paper that I mainly modeled my experiment after, *Contribution of Public Parks to Physical Activity*, had much more available resources. The authors had multiple people observing the park visitors, in order to compare and have more accurate data. The observers were at the park at multiple observation times throughout the day. The authors also observed the park for multiple days of the week. Not having the ability to extensive data of Country Crossing Park may limit my results.

I observed the park a total of five times, on five different days. I visited the park after school, thus my observations were on weekdays. The beginning time for observation ranged from 12:00am to 3:30pm. All observations took about thirty minutes to walk through the park. The average amount of people observed each time was 15, although there was a range from 4 to 34. The most active time was 2:35-3:05pm, where it was likely many kids leaving school and parents picking up their children from the school that borders the park. During these hectic times at the park, observation is difficult and having multiple people to compare with would have been helpful. I debated including parents that were standing at the parking lot, outside of their cars, waiting for their children. I decided to include these people because they are visiting the park regardless of their reason for doing so. The weather, along with the time influenced the amount of park visitation. Having more consistent observation times could have been useful in proving this.
A total of 75 people were observed. I categorized my observations first as women, men or child. Because children were often in groups, it was difficult to record if they were a girl or a boy before they moved. Thus, child is a separate category, was intended to prevent a child from being counted twice or not at all. The adults were nearly equal in males and females. There was only one more adult woman than man. Over 55 percent were children, although most of the children were observed on two days, when the observation time was close to when school was out.

The most common activity recorded was walking, with 37.3 people walking during the observation. Sitting and standing, both accounted for 16 percent of the observed activities. The least prevalent activity was playing soccer, with only one person doing so during the observation. The most vigorous type of activity observed, jogging accounted for 5.3 percent of the observed park visitors. About 12 percent of the visitors were on the playground, all of which were children. An additional 12 percent, all were children as well, were playing. This category of activity included playing, often in groups with a ball or other toys.
Open spaces, such as parks that are accessible in the neighborhood provide destinations for leisurely physical activity. Access to such open spaces have shown to increased physical health, in large part due to walking. Walking is popular and is known to benefit health. Public open spaces are capable of promoting more active lifestyles.

In addition to providing destinations for physical activity, parks can improve a person's health by contacting the nature that parks have. In fact, many doctors prescribe parks in order to come in contact with nature, which can range from heart disease to attention deficit disorder. Being able to conveniently get outdoors helps people exercise more consistently. There has been a trend spreading across the country, where a prescribing outdoors has been accelerated with the intention of improving the community's rate of certain diseases. Parks, as a free resource to the potentially ill public can not resolve every health problem, but could be a major asset in fighting certain diseases. Medical doctors have a very influential role in promoting parks for therapeutic purposes. Parks are becoming more crucial to prosperous societies, by promoting good health.

Interviews of Country Crossing Park residents

In addition to direct observation, I decide to survey residents around Country Crossing Park. I decided to do a survey like my main experiment inspiration, Contribution of Public Parks to Physical Activity, which surveyed residents within two miles of the park as well as park users. I decided to interview residents within ¼ mile of Country Crossing Park. To make sure I questioned people within 0.25 miles of the park, I first stopped at the Country Crossing Park parking lot, set the odometer on my car and then park in a neighborhood where I was 0.25 miles away. Then I questioned houses working my way towards the park. I began around 1:00 in the afternoon on a Saturday. This day of the week was chosen in the belief that people would
be at their homes rather than at work. This time was chosen in the belief that it would be late enough that people would be awake and early enough that people would not be going to bed. Thus the hope was that people would be at home and willing to cooperate by asking my questions.

Of all the papers that I read that used surveys in their experiments, none gave their survey questions. So I had to come up with my own questions. I made my questions based on what I was trying to find out, which was the frequency of park use, activities at the park and the parks influence on health. To find out the frequency of park use I asked “How many time per week do you visit Country Crossing Park?” I followed up this question with “What activities do you do in the park?” Finally I asked “Do you feel the park has influenced your health for the better?” I found it difficult to come up with a question that determined the influence of the park on residents health that did not intrude on peoples privacy of their health. I emphasize that I asked them how they felt the park has influenced their health, rather than if they thought the park has influenced their health. Despite the only slight difference, I thought this would be less personal. I asked everyone the questions with the same wording to minimize discrepancies in interpretation of the questions.

On the given Saturday afternoon, I interviewed twelve people from twelve different residences. I knocked on the doors of much more than twelve homes but twelve people came to the door in about two hours. From the twelve participants, the average frequency of park visitation was 2.04 visits per week. There was a range of 0 to 6 reported visits per week. Two people gave ranges, for example one person said 3 to 4 times per week. For ranges like this, I would take the average of the range. In this example the average would be 3.5 visits per week, which would then be used in the total average. One interviewee stated visiting the park only occasionally, but reported an average of 0 visits per week. The two most common frequencies
were 1 and 2 visits per week.

Answers to the second question were variable. Some people stated only one activity while others gave multiple park activities. Some people mentioned walking a dog as an activity; however, I recorded the two as separate activities. I thought bringing a dog to the park, and thus mentioning a dog in this survey should be its own category, separate from walking in the park. I recorded all the activities that the candidates mentioned, because I wanted to get a clear overview of all the activities that the residents perform at the park. The park activities were not to be recorded as an average, but as measure of all the activities that they do at the park. I did not want to average how much the average resident walks at the park, but how many of the residents mention walking. As shown by the chart below, the most common reported activity is walking. Seven out of twelve people reported walking at or through the park. The second most mentioned activity was bringing a dog to the park. Some of the people mentioned walking a dog at the park, although not all mentioned dog walking, but rather playing with dog.

![Graph of Reported Activity in Country Crossing Park]

- Referee
- Run
- Baseball
- Dog
- Soccer
- Playground
- Sit
- Walk

Row 2
Many of the previous park experiments separated park activity into sedentary, walking and vigorous intensity. When formulating my questions, I considered asking residents about their intensity of activity at the park using these three categories. However, I decided to ask their activities within the park and then translate the activities into these three intensity categories. I thought that method would be less confusing on the interviewees. The sedentary activities mentioned include sitting, which was only mentioned once. Walking activities include refereeing, dog, playground and walking. Vigorous activities can include running, baseball and soccer. There are circumstances when playground activities can become vigorous or baseball becomes sedentary. However, these are the general intensity categories that I thought they can fit into. The most common intensity was walking with 78.9 percent of the activities. Vigorous activities took place in 15.8 percent of the reports. Sedentary activities only took place during 5.3 percent of the reports.

Responses to the third question were more concise. About 83 percent felt that Country Crossing Park has influenced their health for the better. About 8.3 percent of the interviewees, or only one person out of twelve felt that the park has not influenced health for the better. Another single person reported not knowing whether the park influenced health. This can be seen by the chart below.
In an article titled *The Significance of Parks to Physical Activity and Public Health: A Conceptual Model*, the authors tried to create a model showing objectively the benefits of parks. A conceptual model is needed to link physical activity, park features, and their benefits.

The following figure from this study illustrates which characteristics of a park correlate to physical activity. The six conceptual areas on the bottom operate through the four geographic areas in the middle to create park characteristics. The conceptual areas include what type of data should be recorded at the parks, while the geographic data includes where such data should be collected. This figure can be used to promote physical activity in parks by assisting in the development of parks. Future experiments can use this figure as a basis for such linkages.

![Diagram of park characteristics and geographic areas](image)

*Figure 2. Environmental classification of park attributes.*

The following figure displays the prospective relationship between park characteristics, visitors, activities in the park, and the health benefits that parks provide. The lowest section of the model signifies the factors that result in park use or non-use; the characteristics of the park itself and of the users. The middle portion of the model signifies the extent and nature of the park use. Park visitation does not consider the type of activity. The
“Physical activity within the park” box signifies what intensity of physical activity once in the park. The top portion of the model signifies the multiple outcomes or benefits that can come from the different sections. It can be seen from the figure that this includes benefits to an individual's physical health and psychological health, as well as to society, the economy and the environment.

This figure illustrates nicely the relationship between parks and health. Park characteristics influence whether people visit the park. The characteristics of the person also influence whether a person visits a park. Park visitation just considers if a person visits or does not visit. For the people that do visit, they have an option to be physically active there. Physical activity within a park leads to physical and mental health benefits. Health is a very important aspect of a person's life and there are many factors that influence the health of a person. More and more people are beginning to live in urban environments, farther from open spaces, which is
increasing the importance of having available parks. Being exposed to the natural environment is also restorative and valuable to mental health. Given the benefits that parks have on people, a design that encourages use and attract residents is important. Without available parks, people are limited in their physical activity options. This keeps them from the benefits that associate with parks. Many people visit Country Crossing Park, and the residents feel that this park is in fact a benefit to their health. With such important benefits to a person's health, parks should be advocated in other parts of the city to improve the poor health of the rest of Pomona, that does not have access to parks such as Country Crossing Park. Although Pomona has higher rates of many disease and less park space than the rest of the county, Country Crossing Park does benefit the health of the people who have access to it.
Notes


3. Cecily Maller, Mardie Townsend, Lawrence St Leger, Claire Henderson-Wilson, Anita Pryor, Lauren Prosser, Megan Moore, *Healthy Parks, Healthy People,* 2nd ed. (Deakin University and Parks Victoria, 2008).


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