

**Perceptions about physical activity and its associated benefits among employees**

**Case Study in 12 Multinational Companies in Pakistan**

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ABSTRACT

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This thesis focus on the perceptions of the employees working in Multinational Corporations (MNCs) in Pakistan, with regards to their physical activity and its associated benefits. Previous research has shown that physical activity is positively associated with on-job productivity and life satisfaction of the employees across the world. With no such research being carried out in Pakistan before, this thesis aims to focus on the same factors, but uses employees' perceptions rather than employing an intervention study. Furthermore associated benefits of physical activity such as reduced healthcare cost, decrease in exposure to various health-risks and reduced presenteeism were also addressed within the scope of this thesis. An attempt was made to use recalled levels of physical activity to check whether the benefits associated with physical activity can be observed within the target audience as well or not.

In order to collect relevant data, an e-questionnaire was utilized and sent out to relevant Human Resources departments of the MNCs operating in Pakistan. After completing the analysis on the collected data, this study found out that employees working in MNCs operating in Pakistan did positively associate physical activity with their on-job productivity and life satisfaction. Though it was noted that the duration of the recalled level of physical activity did not have an impact on the presenteeism cost and the number of health risks that the employees were exposed. In addition to that it was observed that obesity was a bigger issue in the younger employees and was the most frequently reported health risk by the employees. Furthermore, presenteeism costs were higher for employees who reported being obese as compared to those employees who did not report being obese.

If the employers implement the findings of this thesis, it can help reduce presenteeism costs and therefore help in increasing the productivity of their workforce. Trying to physically activate the workforce can help improve job and life satisfaction of the employees.

Keywords: physical activity, work productivity, life satisfaction, Pakistan, multinational corporations

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# 1 INTRODUCTION

Physical activity (PA) is nowadays widely recognized as a practical tool in the domain of health promotion. In the developed world the impact physical activity has on the lives of individuals and society as a whole has been well researched now. However, due to the technological advances over the years lifestyle in the western world has tended to move towards a more sedentary one and steps are taken on a regular basis to improve the situation and to keep the society more active as a whole (Ten key facts on physical activity in the WHO European Region, 2016). It is a well-researched fact that PA is positively associated with an individual's day to day performance. It allows an individual to feel more active and positively impact his or her efficiency (Berry, Mirabito, & Baun, 2010).

Numerous researches in Europe and North America have also pointed out the impact that PA has on productivity of the employees at the workplace. The idea of life satisfaction or quality of life is something that has been researched for workplace wellness program when it comes to identify the reasons impacting employees' on-job performance. Unfortunately the concept of PA and its association with employee productivity and life satisfaction is something that is not well researched in the developing part of the world. Employee productivity is critical to the success of any organization. In any organization employee productivity is defined as the output per worker or output per hour. Though due to the prevalence of part-time jobs companies focus more on the output per working hour definition of employee productivity. (Chron, 2016.) In this thesis employee productivity will be perceived in a similar manner but in a more qualitative way. Knowing that the target audience is not directly involved in producing any tangible output, it is difficult to measure their productivity using the same definition of output per working hour.

Being from a developing country like Pakistan myself I felt it was important to take the first step so as to bring the truth about PA out in the open. Rather than going for a mass target group so as to generalize the situation of PA in the entire country, I decided to go with a more thoughtful and practical approach. The aim here is to get some relevant output from the research so that other researchers may be tempted to take a look within this



domain for a Pakistani setting. Rather than the entire Pakistani society a certain spectrum of the society was identified for the research. Being a part of a multinational organization myself, I decided to focus on the employees who work in a similar setting within Pakistan. Knowing that sedentary lifestyle is more prevalent in desk jobs where there is not much PA involved in the daily routine, white collar employees were targeted for this research. Due to geographical and financial constraints it was difficult to perform a controlled study on how PA impact employee productivity. Therefore the entire research was narrowed down to employees' perceptions on how they believed PA impact their on-job performance, life satisfaction and other relevant issues they faced due to a sedentary lifestyle. Ultimately the main research questions after all the narrowing down can be summed up as: "Is physical activity positively associated with perceived employee productivity for employees working in MNCs operating in Pakistan?"

On one hand this research poses questions regarding employee wellbeing and health but on the other hand it also provides multinational corporations to consider employee wellbeing as an investment. It is logical to infer that a more productive employee will tend to be more beneficial for the corporation in terms of revenue and cost saving. Employee wellbeing is commonly associated with decreased healthcare costs, reduced insurance premium on employees, decreased presenteeism and absenteeism cost incurred by the companies on behalf of the employees. (Sharifzadeh, 2013.) The research also tries to cover this aspect of costs associated with employee wellbeing by trying to quantify them so as to get some tangible results. Once again the quantified results will be based on how employees perceive it to be rather than through official figures. Various studies carried out in the more developed regions of the world have tried to quantify employee wellbeing programs using company provided data. The output of these wellbeing programs was measured using the concept of "Return on Investment". For every dollar spent on the wellbeing program companies saved various amount on healthcare, presenteeism and absenteeism costs. (Baicker, Cutler & Song, 2010.)

Presenteeism refers to employees who are legitimately ill but continue to come to work. There are inherent problems with presentees: (1) if they are contagious, they put other employees at risk of becoming ill and (2) being ill often reduces the level of productivity

and the quality of work.” (Gatchel & Schultz, 2012). Similarly ”presenteeism cost” can be defined as the cost the company has to incur due to the employee not performing at his or her optimal productivity. On the other hand “Absenteeism” refers to employees who are unable to attend to come to work due to a legitimate illness, but this concept will not be looked in detail in regards to this thesis. The thesis focuses on the second aspect of presenteeism where it effects the level of productivity and the quality or work. More importantly, I will focus on those illnesses that are caused due to lack of physical activity in the employee’s daily routine. This research will help pave way for similar researches, carried out in the developed world, to be carried out in the Pakistani setting.

The main target audience of my research were employees working in multinational corporations (MNCs) in Pakistan. The idea was to involve as many participants within the study as possible so as to get a reasonable data set to work with. Knowing that the aim was to target a bigger audience and develop statistical inferences, quantitative approach was taken. Due to the pioneering nature of the study in the Pakistani study it is important that the methods support the repeatability of the study so that other researchers may build their work on this thesis and come up with some more practical implications (Glenn, 2010). Quantitative approach allows researchers to be more objective and unbiased regarding the study when it comes to testing hypotheses. Furthermore from the business perspective of the companies quoting numbers and figures in the results can have a greater impact on result and output driven managers of MNCs. The results were promising as statistically significant number of employees indicated that they perceived PA to have a positive impact on their on-job productivity. Similar results were observed in regards to life satisfaction as well where employees positively associated PA with life satisfaction as well.

## 2 THE PAKISTANI SOCIETY AND PHYSICAL ACTIVITY: HISTORICAL, POLITICAL AND CULTURAL CONTEXT

After being ruled by the British for almost 100 years the Indian sub-continent got independent in the year 1947. The independence itself was not a very smooth process either as the Indian sub-continent got divided on the basis of religion of with the Muslim majority area came to be known as Pakistan while the Hindu majority areas called what as India. Pakistan itself was a unique country in compromising of two parts not connected to each other by land. The western part was known as West Pakistan while the eastern part known as East Pakistan with India in between the two parts of a single country. Furthermore during the independence the province of Kashmir got disputed as well because of being a Muslim majority area with a Hindu ruler who wanted to merge with India. The Kashmir issue stands till this date as a thorn in the Indo-Pakistan relation. Three wars have been fought between India and Pakistan with the last major one in 1971 leading to the formation of East Pakistan as a separate nation now known as Bangladesh (Indo-Pakistan war of 1971, 2016).

With a population of almost 193 million, Pakistan is currently ranked at number six in the list of most populated countries (Worldometers, 2016). Out of the 193 million only a mere 75 million live in the urban areas (Pakistaneconomist, 2015). The country has a male to female ratio of ten to nine and the median age is approximately 23 years (Worldometers, 2016). The life expectancy in the country is pretty low as compared to any western society and is approximated to be around 66 years. Unfortunately the country has the one of the highest infant mortality rate in the world with almost 66 out of 1000 infants dying at birth (The World Bank, 2016). Alongside all this the country is in top 10 nuclear powers of the world with almost a 100 nuclear warheads (Top 10 nuclear power countries in the world, 2014). The country is predominantly Muslim majority with 97 percent of the population following Islam. There have been reported issues of religious freedom in the country with minorities being attacked by hardcore Muslim extremist group such as Taliban (Freedomhouse, 2015).

## 2.1 Political Culture in Pakistan

The political culture in Pakistan is of intense power struggle between handfuls of political parties. Being a relatively newly independent country (1947) the culture is still in its development stage. Though Pakistan was formed on democratic basis, unfortunately multiple military dictator eras have stopped the development process and prevented the political culture from maturing. With a history of almost 68 years half of it has been ruled by military dictators. (Hashim, 2013.) The first thing the dictators do after coming in power is to set up a dummy democratic parliament to present Pakistan as a democratic nation to the outer world. Here one cannot completely hold the dictators responsible as the ruling democratic parties in different periods were not competent and capable enough thus leading to army takeovers. (Bahadur, 1998, 33-46.) Power struggle, corruption, biased decision making and family based political parties have never allowed the true democratic political parties to flourish in the country. With a considerable support for army at the masses level and a maximum vote turnover of 53 percent (International IDEA, 2013) in general elections throughout the history of the country; a clear indication of people's lack of trust in the ruling democratic parties of Pakistan.

To further worsen the situation the regional situation has never let things settle down within Pakistan as well. With the Russian invasion of Afghanistan during the cold war and the Russians eventually being beaten caused instability in the region for the last two decades. The constant threat of Taliban from the Pak-Afghan border has taken too much of the country's resources and has caused attention to be diverted from internal issues like power crisis and many others. With Pakistan's long and intense political history and rivalry with India at the eastern front Governance could not have been any more difficult. Since the bloody independence in 1947 where Pakistan got separated from a united India (formerly known as sub-continent) and the unresolved Kashmir Issue between the two nations things have never restored to normalcy. "The Kashmir dispute dates from 1947. The partition of the Indian sub-continent along religious lines led to the formation of India and Pakistan. However, there remained the problem of over 650 states, run by princes, existing within the two newly independent countries. Because of its location, Kashmir could choose to join either India or Pakistan. Maharaja Hari Singh, the ruler of Kashmir,

was Hindu while most of his subjects were Muslim. Unable to decide which nation Kashmir should join, Hari Singh chose to remain neutral.” (A brief history of the Kashmir conflict, 2001). It was eventually take over by the Indians through a military incursion while Pakistan still claims right to it on the basis of it being a Muslim majority area. Since independence Pakistan and India have been involved in three wars with Pakistan losing East Pakistan, now known as Bangladesh, in the last war fought in 1971. This further infuriated the situation in the region. To add to it military turnovers due to lackluster democratic governments has not allowed a strong foreign policy to address the issue. Many experts deem Pak-India relations to be a pre-requisite for a stable and peaceful environment in the South Asia region. (Suleri, 2014.)

## **2.2 Average Pakistani and the Middle class**

It is important to realize that Pakistan is not merely a developing country but a country facing multiple problems at the same time. According to the new poverty line set by the government of Pakistan back in 2014 estimated that 60 million Pakistani currently live below the poverty line. The poverty line is defined in monetary terms as 3,030 Pakistani rupees (equivalent to \$30) per equivalent adult per month. It is an alarming situation knowing that approximately one-third of the population is living below one dollar a day (Khan, 2016). Pakistan is often called a rich country with poor people, which is an accurate description of the country. The country holds the fourth biggest slump of the world in Orangi town (Karachi) hosting an estimated 1.8 million people (Joshua, 2014). The country had faced short growth periods in between long periods of crisis and recession. For the people living below or around the poverty line it is difficult to even afford a couple of meals a day. The situation gets sometimes even worse as periods of high inflation making the lives of the poor even more miserable. With all these troubles it is difficult to imagine the poor population of Pakistan being worried about their daily or monthly PA targets as for them PA might be extremely low on their priority list.

Talking about education in Pakistan the situation is not much different. More than five million children are out of school as of 2010 which was almost eight percent of the world’s population of children out of school. The situation is even worse for girls with two-thirds of the children out of school being females. When it comes to the adults the situation is not

much different with an estimated 50 million adults illiterate with two third of them being women. This huge number of adult population being illiterate is the third largest globally. It is no surprise that Pakistan is ranked 113 out of the 120 countries in the Education Development Index (UNESCO, 2012). Pakistan spends a meagre 2.4 percent of its GDP on education. At the national level 89 percent of this budget goes to education expenditure comprising of current expenses such as teachers' salaries, while only 11 percent comprises of development expenditure which is not sufficient to raise quality of education. It does not come as a surprise that an average Pakistani spends only 5.7 years on education which is by far extremely low for a developing country as well (The average Pakistani spends just 5.7 years on education, 2010). Due to such low literacy levels there is a high percentage of unskilled labor. Out of the unemployed labor force in Pakistan 92 percent of them are unskilled people without any proper education (Khan, 2015).

In a country where the average income per capita is estimated to be \$1,513 per year and an average family size of 6.8 people, it is difficult to meet ends with a single earning member of the family (Pakistan Demographic and Health Survey, 2013). Poor education and healthcare system makes the life of an average Pakistani even difficult. Private education is something that an average Pakistani cannot afford for his or her children. Thinking about the adults of the society who on average have 5.7 years of education and earn \$125 a month while trying to sustain a family of six to seven individuals is something that seems to extremely tiring mentally and physically as well. It is difficult to imagine that after such mental and physical stress an individual would have the time to think about PA as an integral part of his or her daily routine.

Between all this issues and problems consistently troubling the masses of Pakistan, the middle class has somehow evolved. Pakistan's middle class is currently the 18<sup>th</sup> largest in the world with 6.27 million out of the 111 million adults considered to be a part of it (Alam, 2015). "A workable definition by the economist is that the middle class refers to people who have approximately one-third of their income available to spend after meeting their basic needs of food and shelter. In sociological terms, it can be defined by occupation, occupational level, education or self-identification, the latter reflecting a sense of self-ascription: one belongs to the middle class because one envisions a middle-class lifestyle

and identity for oneself. It is the class of seekers and strivers putting in the most effort for change in search of a secure future.” (Kardar, 2014). Most common professions for people within this class in Pakistan include senior government officials, managers of large businesses, bankers, professionals like accountants, tax consultants and architects, large farmers, academics in upmarket private schools and in public and private universities and those providing a whole range of services in the sectors of telecommunication, IT, media and retail and allied services, etc. (Kardar, 2014). It is from this very class that the target group for this thesis has been selected. Individuals who are well educated and have maintained a certain lifestyle, which can to a certain extent be compared to that of the western societies, as professionals in MNCs within Pakistan. Their activity levels are highly influenced by the technologically advanced choices they make in their daily routines.

### **2.3 Physical Activity Culture in Pakistan**

In such an intense political situation that Pakistan is currently striving in, getting government and masses focus on the idea of physical activity seems to be far from realization. With a population of almost 200 million a meager budget allocation of \$70 million for recreation, culture and religion can be considered a negligible amount. (Government of Pakistan Finance division, 2014.)

It is unfortunate to know that the physical activity culture in Pakistan has never been researched at any level and if researched the results never published. The very fact that there is not a single reputed educational institute offering any physical activity related courses in their faculties in the country shows the level of interest of the society as a whole in this certain sector. The situation is worse in the urbanized areas where mechanized lifestyle has further reduced the everyday physical activities individuals had to perform (Nanan, 2011). The situation is much better in villages where the physical nature of jobs and simple lifestyle has kept people in some form of physical activity related for example to the agriculture and dairy sector

As for the urban areas the situation as can be seen from the health stats in table 2 (National Action Plan for Prevention and Control of Non-Communicable Diseases and Health

Promotion in Pakistan, 2004) comparing some common health conditions in both urban and rural areas of Pakistan. High blood pressure and obesity are such conditions that can give us a good idea of the prevalent Physical activity culture in the country. It is researched that almost 40 percent of the urban population aged 45-64 is hypertensive while a staggering 37 percent of the women and 22 percent of men aged 35-44 are overweight in the urban areas as can be seen in table 2 (National Action Plan, 2004).

**Table 1. Prevalence of CAD and common risk factors for NCDs in Pakistan (National Action Plan for Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan, 2004)**

	Rural %	Urban %
<b>Coronary Artery Disease? †</b>		
Men	..	26.9*
Women	..	30*
<b>Hypertension? ‡<sup>5</sup></b>	16.2*	21.5*
Men	18** - 25***	28** - 37***
Women	15** - 28***	25** - 43***
<b>Overweight? ‡<sup>5</sup></b>		
Men	9**	22**
Women	14**	37**
<b>Diabetes? † ‡ ?</b>	6.39-13.5*	10.8-16.5*
Men	10.3*	11.1*
Women	4.8*	10.6*
<b>Smoking ‡<sup>7</sup></b>		
Men	39.13*	30.51*
Women	12.5*	
<b>Oral smokeless tobacco ‡<sup>5</sup></b>	10*	
<b>Dyslipidaemia? ‡<sup>5</sup></b>	12.6*	

‡ National data † Regional data

\*Age 15 years and above \*\*Age range: 35-44 years \*\*\*Age range: 45-64 years

According to Arshad (2008) 79.4 percent of the female population of Pakistan are labeled as housewives, who are solely responsible for managing the household. The physical activities available for housewives are quite limited. The culture of joining fitness gyms, yoga classes or any other such activity is non-existent within the lower class. The nearest they ever get to physical activity is during daily household chores where activities like cleaning and cooking help contribute to the physical activity counter. For the middle and



upper class urban housewives this time is further reduced due to maids available at low wage rates to perform most of the daily household chores. There is no research data but it is safe to say that the average time spent by a housewife on physical activity is less than 30 minutes per day which is an extremely alarming situation.

The majority of the female population are housewives which leads to the fact that most men are responsible for managing the financial requirements of the entire family. Here I will focus on the urban male population who work five to six days a week to earn a living. According to a worldwide study by Lee, McCann, & Messenger (2007) on working hours, almost 42 percent of Pakistani working men spend more than 49 hours at work per week which is an extremely high number. Most of the white collar jobs like anywhere in the world are desk jobs with an extremely low on job physical activity requirement. (Leslie, Braun, Novotny & Mokuau, 2013.) Such a laid back office environment discourages the employees from any physical activity. It is understandable that a person who works approximately 10 hours a day will be mentally drained off that he may not want to go for a gym session or a run in the park after getting free from work. In essence the concept of physical activity is relatively new both in urban and rural areas of Pakistan and people are not yet self-aware regarding the idea of physical activity and wellbeing and its impact on their daily lives. Due to the concept being a relatively new one there does not seem to be any major societal pressure where individuals feel the need to be more physically active and fit to be a more involved part of the society. It seems that PA is still very much a personal choice for the target group of this thesis but at the same time the PA culture around them doesn't help their cause either.

#### **2.4 Physical Activity Culture in MNCs operating in Pakistan**

A multinational corporation (MNC) is considered to be a corporation which has at least one of its facilities or assets in another country other than its home country. Though these companies may have offices and sometimes manufacturing facilities in other countries but the main core operation runs from the head office located in the home country (Investopedia, 2016). Similarly for this thesis this definition is very much applicable with all the multinational corporations involved in the study, having their head offices located

somewhere outside Pakistan. Nonetheless all the participants' involved in the study work in multinational companies' offices active in Pakistan.

Here I will try to narrow down my approach to the target audience defined as the employees of the multinational companies operating in Pakistan and specifically white collar employees. White collar work is something that is associated with being mentally challenging rather than being physical in nature. It is performed in an office or in a similar setting. The work requires formal education and the worker enjoys more autonomy, cleaner and safer workplace and higher paid as compared to their counterparts performing physical jobs (blue-collar jobs). (Horn & Schaffner, 2003, 597-598.) The definition of white collar work also follows the same criteria for sample set involved in this thesis. Employees working within MNCs majorly indulge in mental tasks, in an office setting, requiring a high formal education and a safe work environment.

Once again it is unfortunate that no research or data is available on any MNC's physical activity culture operating in Pakistan. Currently most of the MNCs operating in Pakistan are utilizing Pakistan as a market and most of the products they produce are imported. This leads to the fact that most of the people employed in these companies have white collar jobs in areas such as sales, marketing, finance, IT, HR and in some cases engineering if the company has a manufacturing unit in Pakistan. It is important to mention that Pakistani job market is an extremely competitive one with a great imbalance between number of fresh graduates and number of jobs created every year. (International Labor Organization, 2013.) People who are able to get into the MNCs consider themselves extremely fortunate and lucky and will ensure to make the most of this opportunity. Long working hours are extremely common with a standard working day starting at around 0900-0930 and going up till 1900-2000. There have been unreported cases where the weekly working hours have crossed the 60 hours line as well. (Lee, McCann, & Messenger, 2007.) During the office time there is a lunch break that lasts for around one hour and beside individuals might take two to three tea breaks each ranging from 10-15 minutes.

There does not exist any MNC in Pakistan which has a defined program on physical activity for their employees or even consider it as an investment that can generate a remarkable return on investment if planned and executed effectively. Apart from a handful

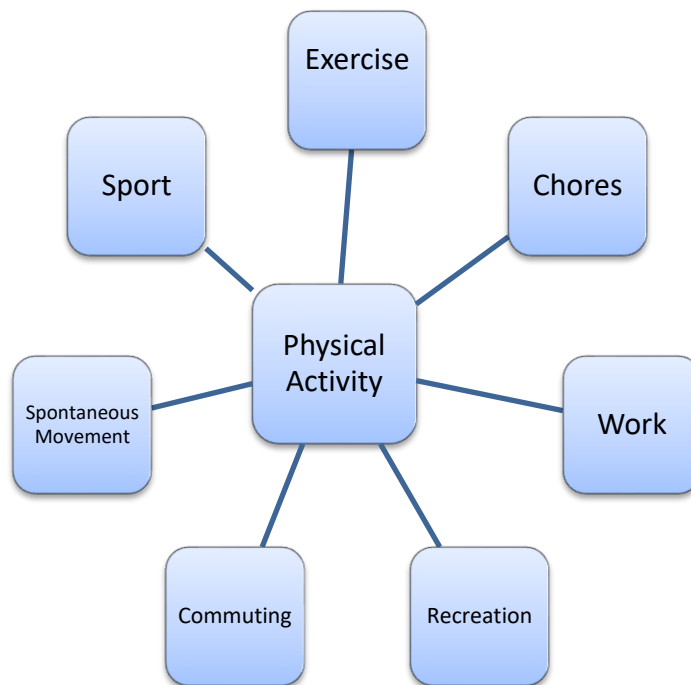
of offices and that mostly only the head offices, there is no on-site fitness center or gym where employees can do any form of an exercise. Companies consider it as a way to reduce their employees' health bills and neither do the employees care about their long term wellbeing. On average an employee might be walking for a maximum of 15-20 minutes while on job and that is the only physical activity they perform. This laid back attitude and the availability of elevators discourage the employees even to use staircases. Though there might be some sport activities conducted by the organizations those are often rare and few once or twice a year and unfortunately the participation rate is extremely low in those events. Due to such conditions lower back pain, high blood pressure, diabetes, obesity and vertigo are extremely common in the employees who have been a part of this system for a considerable time.

### 3 PHYSICAL ACTIVITY IN A GLOBAL PERSPECTIVE

It is necessary to introduce the reader to simpler concepts like PA and health promotion and to more complex ones such as health enhancing physical activity (HEPA). As most of these terms will be regularly used during the rest of this thesis therefore it is necessary for the reader to know in what context these concepts are being used.

#### 3.1 Physical activity (PA) and health promotion in the world today

“Physical activity, as a modern concept is multifaceted and includes within its characteristics any *bodily movement*. It is therefore necessary to distinguish the sub-categories of physical activity.” (Merchant, Griffin & Charnock, 2007, 24-25). Figure 1 presents the sub-categories of physical activity for the reader’s clarity.



**Figure 1. A simple deconstruction of physical activity (Merchant, Griffin & Charnock, 2007, 24)**

By default humans are physically active, it is a state of existence which every one of us experiences through our body. For physical activity to occur two necessary conditions are the purpose and intensity (Merchant et al., 2007). In the context of my study (as will be discussed later as well) the definition of physical activity is the perceived definition that participants have shared. In a country like Pakistan where the concept of physical activity is not so well developed and established, one has to rely on perceptions. (Ranasinghe, Ranasinghe, Jayawardene & Misra, 2013.)

Similarly the contemporary definition of health promotion cannot be covered in a single line. Due to the every changing work routines and lifestyles, the definition of health promotion is something that slightly varies from region to region but should be broad enough to cover all the aspects in a global framework. Probably the best possible and most comprehensive definition of health promotion is suggested by Linda Ewles and Ina Simnett's *Promoting Health*, originally published in 1985. "There they have covered six areas of health promotion which include:

- Physical health: concerned with the mechanistic functioning of the body
- Mental health: concerned with the ability to think clearly and coherently
- Emotional or affective health: the ability to recognize and express emotions appropriately and to cope with stress, depression and anxiety
- Social health: the ability to make and maintain relationships
- Spiritual health: either related to religious beliefs and practices, or with ways of achieving peace of mind
- Societal health: concerned with the capacity of the society in which an individual lives, which supplies the human needs of freedom and opportunity as well as the basic infrastructure for them to be exercised." (Lucas & Lloyd, 2005).

In the context of my thesis, the physical, mental and social health promotion aspect will be focused upon. Physical health will be discussed more in relation to the associated health

risks and costs. While for a measure of mental and social health promotion I will be taking a look at our participants' life satisfaction and work productivity.

### 3.2 PA and Health enhancing physical activity: Why the need?

The concept of health enhancing physical activity (HEPA) is a relatively new term that has developed over the last three to four decades (Bauman, 2004). HEPA has been defined in multiple ways but the most widely accepted definition is the one proposed by the World Health Organization defining it as any activity that, when added to the baseline activity, produces health benefits (WHO, 2010). The main aim here is to benefit one's health with minimum risks of being exposed to any new ones. The average level of recommended physical activity for adults aged 18-64 is 150 minutes of moderate intensity physical activity over the period of a week (WHO, 2010). Though this can be mixed and matched if the person is performing vigorous physical activity as well. It is important to realize that any activity performed above this 150 minutes mark is to be considered as HEPA.

**Table 2. Examples of moderate and vigorous intensity activities**

Source: [www.cancer.org](http://www.cancer.org)

	Moderate intensity activities	Vigorous intensity activities
<b>Exercise and Leisure</b>	Walking, dancing, leisurely bicycling, ice-skating, roller skating, horseback riding, canoeing, yoga	Jogging or running, fast bicycling, circuit weight training, aerobic dance, martial arts, jumping ropes, swimming
<b>Sports</b>	Volleyball, golfing, softball, baseball, badminton, double tennis, downhill skiing	Soccer, field or ice hockey, lacrosse, single tennis, racquet ball, basketball, cross country skiing
<b>Home activities</b>	Mowing the lawn, general lawn and garden maintenance	Digging, carrying and hauling, masonry, carpentry
<b>Occupation activities</b>	Walking and lifting as part of the job (farming, auto or machine repair work)	Heavy manual labor (forestry, construction, firefighting)

Table 2 gives a framework on how to categorize various activities either as moderate intensity activity or vigorous intensity activity. The threshold levels for various health-enhancing effects of PA are continuously sought. “It is likely that many of these effects are not due to abrupt changes in the amount, intensity or frequency of PA that may cause one-off effects, but rather due to subtle changes on a continuous scale.” (Vuori, 2004)

PA is positively associated with alleviating health conditions like lower back pains. Lower back pains are experienced by 70 percent to 85 percent of the people at some point in life. It is one of the most recurring health conditions faced by working aged population and is recorded to be one of leading causes of absence from work. (Andersson, 1999.) PA can help maintain and increase the strength of the back muscles and maintain their flexibility this reducing the chance of injury (Sun, 2000). Though a direct relationship of physical inactivity being associated with the risk of lower back pain is not exposed by any clear cut study, nonetheless a cause and effect relationship is definitely observed. (Taimela, Takala, Asklof, Seppala & Parviainen, 2000.) Similarly there are increased reported cases of lower back pain in school-aged children with the symptoms being directly related to the amount of time children spend sitting in classroom setting. (Salminen, Erkintalo, Pentti, Oksanen & Kormanen, 1999.)

Another health concern associated with lack of PA is overweight or obesity. The most common causes of overweight is when a person’s overall energy intake exceeding the expenditure (Blair & Nichaman, 2002). The need for energy expenditure for travelling, work and in domestic chores has decreased due to technological advancements thus promoting sedentary lifestyles. It is researched that even light to moderate PA can help reduce the risk of obesity among women with sedentary lifestyles (Hu, Li, Colditz, Willett & Manson, 2003). Though sometimes it is argued that low levels of PA are the merely the consequence of being rather than the cause of obesity. (Peterson, Schnor & Sorensen, 2004.) PA itself can help weight reduction to a limited extent, nonetheless the risk of death from causes such as coronary heart disease and diabetes are higher in physically inactive obese as compared to their physically active obese counterparts (Blair & Brodney, 1999). PA has the potential to bring the same amount of health benefits to an obese person who is in more need of it as it would bring to a healthy individual. “Epidemiological studies have

provided evidence that part of the increased risk of morbidity and mortality associated with excess body mass is not caused by obesity but by physical inactivity” (Vuori, 2004).

PA has the greatest preventive impact on subjects most susceptible to diabetes. Diabetes is a very common and growing disease attributed to around four million deaths globally on an annual basis (WHO, 2002). Females who spend more than 40 hours a week at work while sitting have a 70 percent increased chance of being exposed to diabetes with women who did not spend that much time in a sedentary position (Vuori, 2004). Several studies have provided evidence that physical inactivity is directly linked to increase risk of developing diabetes. PA is also beneficial for people who already are suffering from diabetes by decreasing the need for drug treatment due to improved fitness. (Hamdy, Goodyear & Horton, 2001.)

Similarly lower levels of regular physical inactivity are consistently associated with higher blood pressure level and a 30 percent more chance of developing hypertension. Hypertension is defined as the state when an individual’s blood pressure constantly stays above the normal range. Mild to vigorous PA has substantial beneficial impact on blood pressure. It is estimated that a single bout of PA can help reduce the blood pressure for the next 20 hours. Studies have indicated that aerobic exercises at moderate to vigorous intensity level can reduce both the systolic and diastolic blood pressure by 6-7mm of Hg in hypertensive individuals (Hagberg, Park & Brown, 2000). PA helps decrease tension and improve relaxation thus reducing hypertension.

Scientific evidence is convincing enough to safely say that physical inactivity is detrimental to health and wellbeing of individuals globally. Though there might be other bigger contributing factors like poor dietary choices, the lack of PA makes it even worse. The remedy is as simple as performing a certain level of regular PA but economic, social and financial factors might prevent individuals from reaching the optimal level of PA. Society as a whole is responsible for providing individuals with enough opportunity and information regarding regular physical activity and its associated benefits but at the same time the individual has certain responsibilities as well.



### 3.3 International Health Promotion programs

Gebhardt & Crump (1990) write about different Health and Wellness programs being implemented in different International organizations and what benefits have the programs brought to the organizations and its employees. The main reason behind starting these programs has been the rising health costs of the employees that the companies have to bear. The estimated cost of cardiovascular diseases in terms of health costs and absenteeism was estimated to be \$10 billion in US in the year 1986 (Gebhardt & Crump, 1990). In this study by Gebhardt & Crump (1990) three different types of health and wellness programs were observed. The type 1 program was more of a promotional campaign while type II and type III being more formal fitness programs with proper structure and participation. The type II and III were further classified into general fitness programs and Job related fitness programs. The first being more appropriate for corporate personnel and people with white collar jobs while the latter one for employees required to be physically fit on job for example firefighters. A general fitness program conducted by Prudential Insurance Company showed a decrease from 56 percent to 33 percent of people in the low to fair fit group. This decrease was directly translated into an increase in the category of people with average, good and high level of fitness (Gebhardt, & Crump, 1990).

Similarly Johnson & Johnson carried out a 30 month fitness program and categorized the 11,000 employees in three categories: 30 months participation, 18 to 30 months participation and no participation at all. It was observed at the end of the program that the inpatient health cost per capita for each group was \$42, \$43 and \$ 76 respectively showing a huge per capita saving due to the fitness program. Average savings of a quarter million dollar per year were recorded against this fitness program. A similar program implemented by Prudential Insurance Company resulted in a 20 percent decrease in average sick days and a decrease in major health costs by \$262 per participant of the health program. The return on the fitness program was 1.93 to 1 meaning almost twice the savings as compared to the fitness program cost. Cox et al. (1981) selected two similar white collar insurance companies and demonstrated a significant reduction in absenteeism,

by 22 percent, with the institution of a fitness program leading to an estimated saving of \$83,265 (Gebhardt, & Crump, 1990).

NASA used a self-assessment on 237 executive employees to see adherence to and effectiveness of fitness programs. The participants were categorized into three types with high, medium and low adherence to the fitness program. It was noted that 50 percent of the participants in the high adherence group reported increases in work performance and positive work attitudes compared to 25 percent to 28 percent and 12 percent to 15 percent for the moderate and low adherence groups, respectively (Gebhardt & Crump, 1990). The research gives a good overall cost and benefit analysis of health and wellness programs at workplaces. Taking multiple quantitative studies in different types of industries and showing how wellness and fitness program can affect health costs, employee morale, perceptions regarding productivity and other associated factors have shown how such programs are independent of the industries they are carried out in. Such programs are not only of advantage to the employees but the employers should realize that money spent on such programs is more of an investment which can have exceptional returns if they ensure to include the elements that are needed for a successful fitness program as discussed in the end. (Gebhardt & Crump, 1990.)

Another interesting study (Berry, Mirabito, & Baun, 2010) discusses the output that the companies can get through the wellness program. First and foremost is the decreased health care cost. For example HEB, a retail grocery store chain, had a per capita decrease of \$1500 on health care costs of employees participating in the wellness program. SAS software company get a return of \$1.41 on every dollar spent on the wellness program through decreased health care costs. The company estimated that by moving 10 percent of its employees from high/medium risk to low risk gets an ROI of six to one. Second comes the greater productivity achieved. The main problem here is “presenteeism” where people come to work but under perform due to some sort of illness and thus causing decrease in overall productivity. In 2002 DOW (Chemicals Company) estimated that for each individual, Presenteeism costed them \$6721 while per capita healthcare costs were around \$2,278. So the idea here is to increase productivity and hence decrease presenteeism cost. Lastly health and wellness program also boost the morale of the employees due to the fact

that such programs need trust between higher management and employees at all levels. Figure 2 (which is directly adopted from the article) shows a metric system to evaluate the success of the program for all the stakeholders involved (Berry, Mirabito, & Baun, 2010).

Corporations that were discussed in the literature review have tried to cover each characteristics of a successful wellness program in detail thus providing guidelines for individuals or companies planning to carve out such a program within their own capacities. Berry et al. try to cover both the employees end and the employer end and like any other business talks about its viability and ROI to let other organizations that it is for their own monetary benefit rather than only for the employees wellbeing.

Employee Metrics	Organizational Metrics
<p><b>EMPLOYEE PARTICIPATION</b></p> <p><i>Utilization</i>—the total number of employees involved in specific program activities</p> <p><i>Penetration</i>—the percentage of employees who have participated in at least one wellness activity</p> <p><i>Depth</i>—the percentage breakdown of employees who are light or heavy users of wellness activities</p> <p><i>Sustainability</i>—the number of employees who continue to engage in a specific risk-reducing behavior</p>	<p><b>HEALTH CARE</b></p> <p>Medical care and pharmaceutical costs and utilization (from claims analysis)</p> <p>Disability costs</p> <p>Workers' compensation costs</p>
	<p><b>SAFETY</b></p> <p>Safety incident rates by category or type</p> <p>Lost and modified work days related to safety incidents</p>
	<p><b>PRODUCTIVITY</b></p> <p>Absenteeism</p> <p>Presenteeism</p>
<p><b>SATISFACTION</b> with the program's scope, relevance, quality, and accessibility (from survey data)</p>	<p><b>ORGANIZATIONAL CULTURE</b></p> <p>Trust in management (from anonymous survey data)</p> <p>Voluntary turnover</p> <p>Willingness to recommend the firm as an employer</p>
<p><b>HEALTH-RISK STATUS</b> identifying the percentages of employees at high, moderate, or low health risk (from HRAs)</p>	

**Figure.2 Employee/Organization Workplace wellness program metrics (Berry, Mirabito, & Baun, 2010)**

To verify the results of the previous researches another research conducted by Baicker, Cutler and Song (2010) on whether Healthcare Wellness Program can generate savings or not can be utilized. The aim of the research was to look at multiple health and wellness

programs conducted and promoted by employers with the condition that program were well established and had been running for a few years now. Only those programs were selected which had a well-defined intervention and had a well-defined treatment and comparison group leading to a sample group of 36 different disease prevention and wellness programs. Healthcare costs and absenteeism studies were analyzed separately and so were the results. The results of the study are summarized in Table 3.

**Table 3. Characteristics and Results of Worksite Wellness Programs studied (Baicker, Cutler and Song, 2010)**

**EXHIBIT 1**

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**Summary Of Characteristics Of Worksite Wellness Programs Studied**

Method of delivery	Percent of firms
Health risk assessment	81
Self-help education materials	42
Individual counseling	39
Classes, seminars, group activities	36
Added incentives for participation	31
Focus of intervention	
Weight loss and fitness	66
Smoking cessation	50
Multiple risk factors	75

**EXHIBIT 2**

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**Summary Of Employee Wellness Studies Analyzed**

Study focus	Number of studies	Average sample size		Average duration (years)	Average savings <sup>a</sup>	Average costs <sup>a</sup>	Average ROI <sup>b</sup>
		Treatment	Comparison				
Health care costs	22	3,201	4,547	3.0	\$358	\$144	3.27
Absenteeism	22	2,683	4,782	2.0	\$294	\$132	2.73

The results were quite promising with an average ROI of three times on the employers' investments. Though as indicated in the study the research has some limitations. For example most of the firms conducting these programs usually have the highest return and secondly we cannot cancel out the publication bias as no company would like to publish a failed wellness program. Regardless of these limitations the effect of health and wellness

program can be seen translated into employee productivity through decreased health care costs and decreased absenteeism costs. (Baicker et al., 2010.)

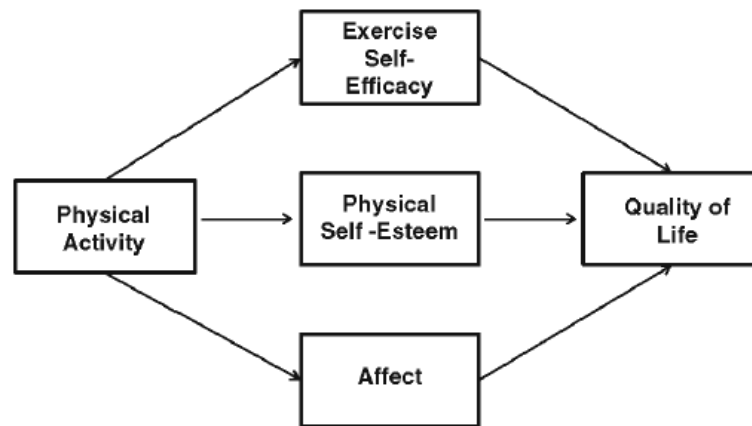
Thinking it from the perspective of this thesis the international health promotion programs, discussed in this sub-chapter involving various MNCs across the globe, are very relevant to the setting faced by our target group working within MNCs in Pakistan. Regardless of Pakistan being a developed country the culture within MNCs operating in Pakistan is not much different from what is observed within the organizations across the globe. When talking in regards to health promotion, something that is implemented and workable in the office of an MNC located in the western part of the world, that concept can readily be adopted and implemented in the organization's Pakistan office as well. Though no such health promotion programs are launched and researched in any MNC within Pakistan, this does not mean that such programs cannot be implemented in the Pakistani MNC setting.

### **3.4 Theoretical Framework**

The theoretical framework developed is a hybrid model derived from relevant frameworks and professional opinions. Before looking into the models the dependent and independent variables will be defined. The three dependent variables this thesis focuses on are perceived employee productivity, employee life satisfaction and presenteeism cost while level of physical activity being the independent variables in this case.

For perceived employee productivity the framework is based on this statement by Zuckerman: "There's no question that people who are fit are more productive; they enjoy their work more and accomplish more" (Neck & Cooper, 2005). The aim is to prove or disprove this statement. Though several on-job fitness programs have showed that PA and productivity are positively associated it would be a good starting point for a country to prove that PA is positively associated to perceived level of employee productivity so that a case can be developed to introduce intervention studies as well. As for life satisfaction is concerned the theory applied is from the study conducted by Elavsky, McAuley, Motl and Konopack in 2005. The research focuses on how PA can impact the quality of life of older adults through exercise, self-efficacy, physical self-esteem and affect (Elavsky, McAuley, Motl & Konopack, 2005). Rather than using the entire model the impact of PA on quality

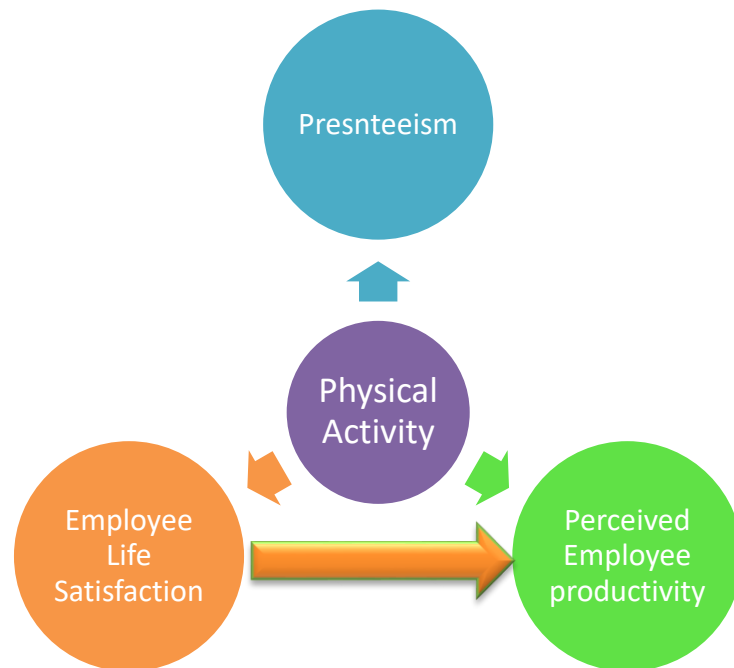
of life is adopted for this thesis. “Despite the inconclusive definition of life satisfaction, life satisfaction could refer to subjective wellbeing for the elderly and it sometimes shares commonality with quality of life.” (Grann, 2000). The terms of quality of life and life satisfaction are sometimes used interchangeably in research therefore while adopting Elavsky et al. theoretical framework the two terms will be interchanged too during the adoption process. Figure 3 shows the proposed theoretical framework model proposed by Elavsky et al. in 2005.



**Figure 3. Physical activity and quality of life model (proposed by Elavsky et al., 2005)**

Lastly the idea of presenteeism is also added in to the hybrid theoretical framework for this thesis. This part of the framework is partly adopted from the idea behind physical activity and employee productivity. Employees who are more physically active should logically have a lower presenteeism cost associated to them. The question arises if people who are more physically active are more productive leads to the point that is physical activity positively associated with reduced presenteeism as well. The idea here is also to look at the concept of absenteeism which is defined as a person being absent from work due to some legitimate illness. Various physical fitness programs have reported reduced absenteeism, particularly short and disruptive absences. (Kerr, Griffiths & Cox, 1996.) MNCs like Johnson & Johnson reported a 15 percent decrease in absenteeism through the implementation of a multiphase fitness program (Barker, 1988). The idea here is to extend those finding related to absenteeism and use it for presenteeism. As the presenteeism data

is self-reported therefore it should be considered more of perceived presenteeism rather than presenteeism obtained from any other intervention or experimental data. According to Robertson and Cooper (2011, 2-24) positive psychological wellbeing is positively associated with on-job performance. This thought process is included in the framework by asking the question if employees who perceive to be more satisfied with life, perceive themselves to be more productive at work too. The theoretical framework model when tweaked and adopted from other frameworks and opinions is depicted below in figure 4. The arrow indicates the effect of one variable on another, with the variable at the head of the arrow being the dependent variable.



**Figure 4. Theoretical Framework of the study**

## 4 RESEARCH DESIGN AND METHODOLOGY

### 4.1 Research Question

Apart from the main research question of physical activity being positively associated with employee productivity or not, there are several other aspects that will be looked upon when trying to answer multiple sub-hypotheses developed in the thesis. A conscious effort has been made to look at the social aspect of this issue using the concept of life satisfaction. Furthermore from a managerial perspective there was the need to look at the associated healthcare and presenteeism cost and try to gather some tangible results to see if perceived level of PA had any impact on such costs. Other factors such as age were also given some weightage while formulating the sub research questions. The aim is to see the impact of PA on other related aspects of employees' lives as well that might eventually be of interest to their employers as well. Some of the sub-hypotheses were developed in order to get a deeper understanding of the answer for the main research question. To sum it up the following questions will be used to test various sub-hypotheses of which some of them are closely linked to the main research question.

1. Is PA positively associated with perceived life satisfaction for employees working in MNCs operating in Pakistan?
2. Do people who positively associate PA with employee productivity are more active in their daily lives in terms of time spent per week on preferred PA?
3. Does age of employees impact their level of perceived physical exertion?
4. Do people who are more physically inactive face more health risks associated with sedentary lifestyle?
5. How has physical inactivity impacted the annual health expenditure of an individual during the last two years?
6. Is presenteeism cost higher for employees who are more physically inactive in their daily lives than employees who are relatively less physically inactive in terms of time spent on any form of preferred PA?



## 4.2 Research Methods

The two most researched methods and the most prevalent in the domain of sport research are the quantitative and qualitative methods. There have been cases where researchers have tried to use a mix method involving both when it seems appropriate. For this research's questions it was more appropriate to use a quantitative approach as I am trying to test a theory or explanation that is already well established (Curwin & Slater, 2008, 8-30). As mentioned in the introduction section the research question revolves around the perceived impact physical activity has on employee productivity and related issues in a multinational corporation setting in Pakistan. If taken purely as a research problem the task is to identify whether physical activity has an influence on employee productivity and life satisfaction of the employees. In such a scenario where identification of factor(s) that influence a certain outcome is/are to be observed, quantitative approach is the most applicable (Creswell, 2009).

“An individual trained in technical, scientific writing, statistics, and computer statistical programs and familiar with quantitative journals in the library would most likely choose the quantitative design.” (Creswell, 2009). Being at ease with technical writing and computer aided softwares, I feel more confident with the quantitative approach. Furthermore certain rules and procedures already exist when it comes to writing quantitative studies thus making the process of writing a bit more organized and easier to follow (Creswell, 2009).

After the academics this thesis' secondary audience is the higher management of multinational corporations operating in Pakistan. Like in any corporate organization everything needs to be presented in a more quantifiable manner. The long term aim of this study is to develop a culture of physical activity within such corporations in Pakistan and for that it is required to consider how to influence the thought process of the upper management who are also the policy makers within the organization. Therefore it is important to realize that a quantitative approach can provide me with statistical and numerical based results that will be of more value when presented to my target audience (Creswell, 2009).

Knowing that this is the first ever research study on physical activity in relation to employee productivity in a country like Pakistan, it is important to realize that the methods support the repeatability of the study (Glenn, 2010). It is crucial to this area of research within the country that new researchers can continue with and build upon this existing research. The research involves multiple sub-questions that can be answered using statistical inferences only thus requiring the need for a quantitative approach. Furthermore unlike qualitative methods, quantitative approach can be considered more objective and unbiased when it comes to testing hypotheses. It can allow to check for relationship between variables even in a highly controlled environment as well (Glenn, 2010).

### **4.3 Data Collection**

There are a couple of designs within quantitative research strategies when it comes to research in the domain of health promotion and social sciences in general. “Survey research provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population.” (Creswell, 2009, 132). This method is predominantly used in non-experimental research, where the researcher is more interested in knowing the behavior of the participants rather than checking for the effects of an intervention for example (Mrug, 2010). It allows the researcher to tailor the questions according to his or her research question with the option of gathering responses in a variety of ways thus being flexible (Mrug, 2010). One limitation of this approach is that the respondents might not be able to interpret the question correctly and therefore can create a bias in the responses to that question (Mrug, 2010).

On the other hand experimental research tries to determine if a certain treatment can impact or influence an outcome. The impact is measured by having a control group (without treatment) and a test group (with treatment) where one of the group is deprived of a certain treatment and later evaluated. The aim is to collect data in two or more conditions that are identical in all aspects but one which the researcher tries to explore through the variance in results (Chow, 2010). The basic form of experimental research involves an

independent variable, a dependent variable, control variables and a control procedure. (Chow, 2010, 448-452).

As this thesis involves social behavior, attitudes and opinions rather than an intervention, I decided to go with the quantitative survey design approach to deal with my research question. The aim here is to get responses on individuals' perception on how they perceive physical activity can impact their on-job productivity. Other questions relating to perceived level of PA, associated health risks, perceived life satisfaction etc. are also opinion and attitude based questions and therefore can be covered well using a survey (Chow, 2010). As the plan was to gather data using a larger sample set (approximately 100 individuals), this meant that large amount of data was needed to be collected in a short period of time. Using a survey was the most cost effective and practical method of data collection (Popper, 2004). Furthermore the use of surveys allows analyzing such quantity of data in a more organized manner (Popper, 2004). The results can be quickly analyzed using tools like SPSS and it fits my aim and purpose of the study perfectly. In the survey a very high proportion of my questions are close-ended therefore allowing ease in analyzing and comparing data. The survey was cross-sectional in nature with data being collected at one point in time.

Knowing that the data was to be collected in Pakistan while I was residing in Finland throughout the entire data collection, the only procedure of data collection used was an e-questionnaire. The main instrument used in data collection was "Google Forms", a very reputable and widely used tool provided by Google Inc. It is a very easy to use tool which allows the researcher to form sub-sections with varying number of questions. Furthermore the user can apply settings for each question separately so as to create multiple choice questions or other close-ended questions. The service being free makes the research process even smoother. The questions were divided according to different themes being covered within the questionnaire. Predominantly a 5-point Likert Scale was used with answer choices varying from "Strongly Agree" to "Strongly Disagree". The questionnaire was divided into the following five sub-sections (See Appendix 1):

1. Demographics and background information
2. Perceived level of physical activity

3. Employee perception regarding physical activity and its effects on work productivity
4. Employee perception regarding physical activity and its effects on life satisfaction
5. Employee physical inactivity related health problems and associated issues

A major proportion of the questions were adopted from pre-validated surveys. Rather than formulating the questionnaire from scratch I used reliable pre-validated surveys to get questions that could answer my research questions. Some of the questions were formulated with the help of my supervisor Hanna Vehmas which I believed were integral to my study. Due to geographical constraints pilot study could not be carried out for those questions. Question involving perceived level of PA were semi-adopted from the “World Health Organization Physical Activity Questionnaire” with the questions being slightly tweaked according to the norms and cultures of the Pakistani society (Global physical activity questionnaire, 2015). The sub section on life satisfaction in relation to PA was adopted from the Rehabilitation survey used by The Rehabilitation Institute of Chicago (Rehab Measures, 2010). Physical inactivity related health problems and associated issues questions’ were taken from the study “Does Fitness and Exercises Increase Productivity? Assessing Health, Fitness and Productivity Relationship” published in the American Journal of Management. (Sharifzadeh, 2013.)

Exactly 12 MNCs operating within different sectors in Pakistan varying from the manufacturing business to the service industry were contacted. Various methods were employed to contact the target audience who had the potential to be a part of the sample group. The main communication method used was e-mailing the questionnaire to the Human Resource Managers of the respective MNCs after briefing them about my thesis via e-mail or telephone. The e-questionnaire was e-mailed to the respective managers during the month of October (2015) and responses were accepted till the end of the year 2015. Being a part of a multinational corporation myself from 2012-2014, personal links and resources were utilized for data collection. Individuals were e-mailed the questionnaire directly after taking their respective managers into confidence so as to ensure the objectivity of the study. Only white-collar employees working within the MNCs were

contacted for the study as my research focuses on this certain target group only. Approximately 200 individuals were approached out of which 86 replied indicating a participation rate of 43 percent. The questionnaires were filled out anonymously with no privacy laws of the country being broken or misused. Though the target was to ensure a balanced male to female participation ratio but unfortunately out of the 86 respondents only 12 were female, indicating the inherent gender imbalance in the workforce of the MNCs operating within Pakistan. (Khan, 2009.)

#### **4.4 Data Analysis**

As already discussed I will be using a quantitative approach for my thesis. The most useful tool when it comes to quantitative data analysis in the domain of social sciences is SPSS. (Garrison, 2010, 124-125.) "SPSS Statistics" tool is the most widely used statistical tool to analyze quantitative data. "IBM SPSS Statistics is an integrated family of products that addresses the entire analytical process from planning to data collection to analysis, reporting and deployment." (IBM, 2016). Before moving on with my data analysis section I believe it is important to share some vital information on statistical test usually used within quantitative research and the conditions and reasons behind using each test. Table 4 gives a summarized view on why each one of the popular statistical tests are used.

**Table 4. Criteria for Choosing Statistical Tests (Creswell, 2009)**

Nature of Question	# of Independent Variables	# of Dependent Variables	# of Control Variables	Type of Score Ind. / Dep. Variables	Distribution of Scores	Statistical Test
Group comparison	1	1	0	Categorical / Continuous	Normal	t-test
Group comparison	1 or more	1	0	Categorical / Continuous	Normal	Analysis of variance
Group comparison	1 or more	1	1	Categorical / Continuous	Normal	Analysis of covariance
Group comparison	1	1	0	Categorical / Continuous	Non-normal	Mann-Whitney U test
Association between groups	1	1	0	Categorical / Categorical	Non-normal	Chi-square
Relate variables	1	1	0	Continuous / Continuous	Normal	Pearson product moment correlation
Relate variables	2 or more	1	0	Continuous / Continuous	Normal	Multiple regression
Relate variables	1	1 or more	0	Categorical / Categorical	Non-normal	Spearman rank-order correlation

As discussed already the first (and the main) and second questions that I ask in my research relate to how employees working within MNCs in Pakistan perceive the impact of PA in relation to employee productivity and life satisfaction respectively. Data was collected using a 7-item sub section for impacts related to employee productivity and a 6-item sub section related to life satisfaction within the questionnaire, answered using a 5-point Likert scale.

”Likert (pronounced lick-ert) scaling is a method of attitude, opinion, or perception assessment of a unidimensional variable or a construct made up of multidimensions or subscales. The Likert scale provides a score based on a series of items that have two parts. One part is the stem that is a statement of fact or opinion to which the respondent is asked to react. The other part is the response scale. Likert was the first recognized for the use of a 5-point, ordinal

scale of strongly approve—approve—undecided—disapprove —strongly disapprove. The scale is often changed to other response patterns such as strongly agree—agree—neutral—disagree—strongly disagree.” (Barnette, 2010).

Table 5 presents the items included for the two questions and gives the reader an idea on how the two variables of perceived employee productivity and life satisfaction were measured. The employees were asked on how they believe PA would help them in the items discussed below. The responses were analyzed using Pearson product moment correlation. Correlation lets the researcher know about the magnitude and direction of association between two variables measured on an interval scale (Creswell, 2009). The main aim here is to reiterate the participants’ perceptions using multiple items rather than relying on one item so as to get a more reliable measure than could be obtained using one item. (Brill, 2008, 427-429.) For a more thorough analysis differences in opinion, on the aforementioned research questions, depending on gender are also analyzed in the results section using independent sample t-test.

**Table 5- Items measuring perceived employee productivity and life satisfaction**

Items to measure perceived employee productivity	Items to measure life satisfaction
<ol style="list-style-type: none"> <li>1. To be more productive at work</li> <li>2. To be more focused during meetings</li> <li>3. To think more clearly about work related problems</li> <li>4. To concentrate more on work tasks</li> <li>5. To enjoy work better</li> <li>6. To related better to co-workers</li> <li>7. To feel less drained out nearing the end of day’s work</li> </ol>	<ol style="list-style-type: none"> <li>1. To be more satisfied with life in general</li> <li>2. To be motivated to keep in touch with friends</li> <li>3. To improve your relationship with your immediate family</li> <li>4. To be more satisfied with your financial situation</li> <li>5. To enjoy work better</li> <li>6. To enjoy leisure activities in a better manner</li> </ol>

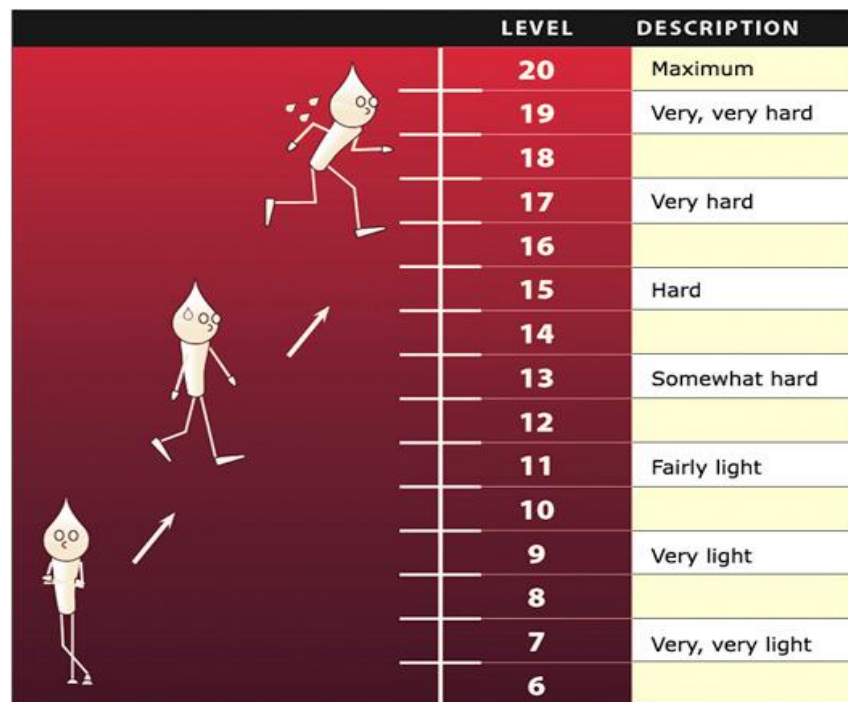
To make things more concise and reader friendly I have summarized the remaining research questions along with variables involved, measure of variables, test used and reasoning behind the test being used in table 6. Using predominant approaches in health promotion researches, values have been assigned to Likert scale answer choices with “Strongly Disagree” being assigned the numeric value ”1” while “Strongly Agree” assigned the numeric value ”5” at the other end of the spectrum. For example for each individual response the answers to all “items” representing life satisfaction are averaged out for ease in comparison and analysis. (Brill, 2008, 427-429.) For example a participant answering perceived employee productivity’s seven items will be assigned an average value of ”3” if he or she has answered all the items as ”Undecided”.



Table 6. Detailed data analysis

Research Question	Variables Involved	Measure of Variables	Statistical Test Used	Reasoning
<b>Are people who positively relate PA with employee productivity more active in their daily lives?</b>	1. Perceived employee productivity (Continuous Variable) 2. Time spent on preferred PA per week (Interval Scale)	1. Average Likert scale score for perceived employee productivity 2. Number of hours spent per week	ANOVA (Analysis of Variance)	Group Comparison Involved
<b>Does age impact the level of perceived exertion?</b>	1. Age of employee (Continuous Variable) 2. Level of perceived exertion (Continuous Variable)	1. Number of years 2. Borg Scale of perceived exertion (from 6 - 20)	Pearson product moment correlation	Requires relating variables
<b>Do people who are more physically inactive face more health risks associated with sedentary lifestyle?</b>	1. Time spent on preferred PA per week (Interval Scale) 2. Health risks participant got exposed to due to lack of PA	1. Number of hours spent per week 2. Number of health risks identified	ANOVA	Group Comparison Involved
<b>How has physical inactivity impacted the annual health expenditure of an individual during the last two years?</b>	1. Time spent on preferred PA per week (Interval Scale) 2. Change in the annual health expenditure over the last two years	1. Number of hours spent per week 2. Increase, decrease or unchanged health expenditure	Chi Square	Relating categorical variables
<b>Is presenteeism cost higher for employees who are more physically inactive as compared to employees less inactive?</b>	1. Working hours lost due to health problems caused by lack of PA (Continuous scale) 2. Time spent on preferred PA per week (Interval scale)	1. Number of hours lost 2. Number of hours spent per week	ANOVA	Group comparison involved

Before closing the data analysis it is extremely important to discuss the scale selected for perceived physical exertion for the questionnaire. ”The Borg Scale takes into account your fitness level: It matches how hard you *feel* you are working with numbers from 6 to 20; thus, it is a “relative” scale. The scale starts with “no feeling of exertion,” which rates a 6, and ends with “very, very hard,” which rates a 20. Moderate activities register 11 to 14 on the Borg scale (“fairly light” to “somewhat hard”), while vigorous activities usually rate a 15 or higher (“hard” to “very, very hard”). Dr. Gunnar Borg, who created the scale, set it to run from 6 to 20 as a simple way to estimate heart rate—multiplying the Borg score by 10 gives an approximate heart rate for a particular level of activity.” (The Borg scale of perceived exertion, 2016.) Figure 5 gives an apt representation of the Borg scale as discussed.



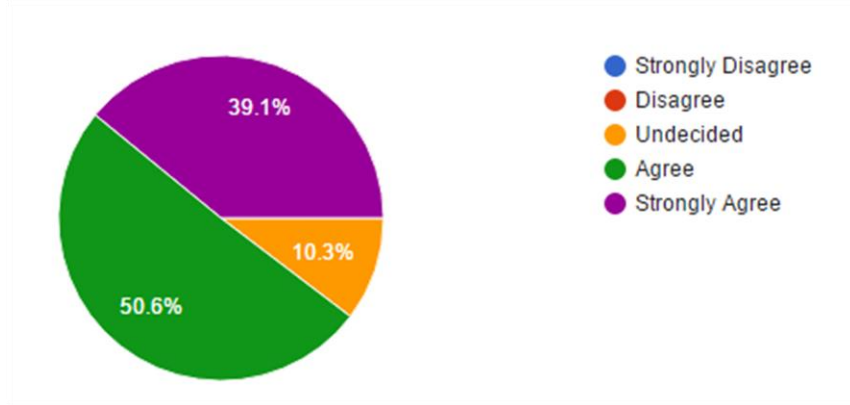
**Figure 5. Borg scale of perceived exertion (Borg, G. A., 1982)**

## 5 RESULTS

The results section is sub-divided on the basis of the research question being answered. To make things easy and simple answer to each research question or sub question is being catered for using separate sub-sections.

### 5.1 Association between perceived PA and employee productivity

The responses from the employees were overwhelming as expected. The results were gathered using a 7-item five point Likert scale. A single variable was developed by assigning each of the items numerical values from 1 (Strongly Disagree) to 5 (Strongly Agree) and then averaging them out over the 7-items for each respondent. Averaged out responses ranged from 1.86 to the maximum possible value of 5.0. The mean statistic for the singular variable developed came out to be 3.93 with the 95 percent confidence interval ranging from 3.80 to 4.06. A value of 3.93 suggests that on average the respondents agree that their perceived physical activity is positively associated with their on-job productivity. Figure 6 displays, through the use of a pie chart, the responses for one of the 7-items used to measure the perceived PA in relation with employee productivity.



**Figure 6. “Do you believe being physically active and exercising regularly will help you be more productive at work?”**

Neither of the 7-items under discussion displayed any outlier behavior with the item concerning impact of perceived PA on relating better to co-workers displaying the least positive results with 65 percent of the respondents either going for "Agree" or "Strongly Agree". The results show a clear support for the positive impact employees believe PA can have on their on-job performance.

## **5.2 Association between Perceived PA and life satisfaction**

A similar analysis was done to see the impact of perceived PA on life satisfaction as reported by the employees working within the MNCs. Each response was assigned a numerical value ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) and were averaged out to create a single numerical variable representing the relationship between perceived PA and life satisfaction of the employees. Table 7 shows the descriptive statistics for this specific variable generated using SPSS. Similar results were observed for this scenario as well with the mean score of 3.8 out of a maximum possible score of 5 indicating that on average people "Agree" with the hypothesis that perceived PA is positively associated with their life satisfaction. A 95 percent confidence interval ( $\alpha = 0.05$ ) of 3.68 – 3.93 also direct towards similar results.

Out of the 6-items used to measure life satisfaction only one item showed some outlier results with only 34 percent of the respondents either agreeing or strongly agreeing to the statement that "physical activity helps in feeling more satisfied with their financial situation at hand". Beside that respondents perceived that physical activity can have a positive impact on their everyday dealing with their family members and work colleagues and furthermore can help them enjoy leisure activities in a more fulfilling manner. After seeing these two results one thing that comes to mind is whether life satisfaction and on-job productivity have any positive association or not. To look into this question in detail a correlation analysis was performed, results for which are shared in the next sub-section.

**Table 7. Descriptive statistics for variable measuring association between perceived PA and employee life satisfaction**

Descriptive Statistics				
			Statistic	Std. Error
<b>Perceived physical activity in relation to life satisfaction</b>	Mean		3.8046	.06179
	95 percent Confidence Interval for Mean	Lower Bound	3.6818	
		Upper Bound	3.9274	
	5 percent Trimmed Mean		3.8042	
	Median		3.8333	
	Variance		.332	
	Std. Deviation		.57635	
	Minimum		2.17	
	Maximum		5.00	
	Range		2.83	

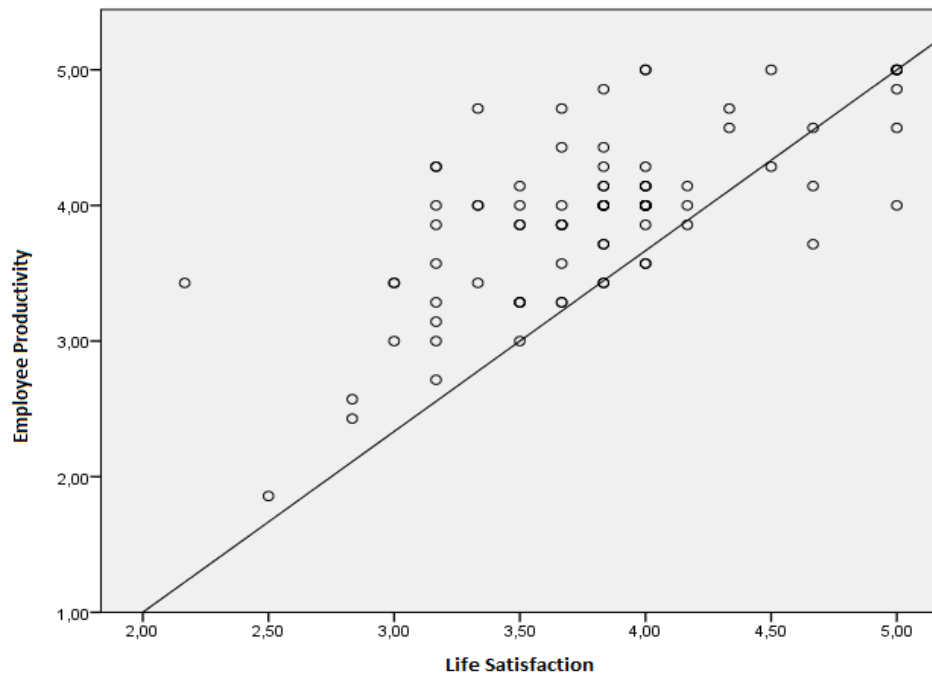
### 5.3 Association between life satisfaction and employee productivity

The concept of life satisfaction has been well researched and there have been contradicting results on whether they are correlated or not. Averaged out variables created to measure perception related to employee productivity and life satisfaction were used to perform the correlation. Results of the correlation performed are displayed in table 8 and figure 7 (relevant results are in bold). The results show a strong positive association between life satisfaction and employee productivity with a correlation coefficient of +0.682. Furthermore a p-value of less than 0.05 also verifies the fact that the result is statistically significant. This result is particularly interesting when seen in the context of the Pakistani society where life satisfaction is not seen as a factor behind improved productivity by the majority of the employers.

**Table 8. Association between perceived employee productivity and perceived life satisfaction in relation to PA**

Correlations			
		Variable measuring perceived PA in relation to employee productivity	Variable measuring perceived PA in relation to life satisfaction
Variable measuring perceived PA in relation to employee productivity	Pearson Correlation	1	<b>.682**</b>
	p-value		<b>.000</b>
	N	87	<b>87</b>
Variable measuring perceived PA in relation to life satisfaction	Pearson Correlation	<b>.682**</b>	1
	p-value	<b>.000</b>	
	N	<b>87</b>	87

\*\* . Correlation is significant at the 0.01 level (2-tailed).



**Figure 7. Perceived employee productivity in relation to PA versus perceived life satisfaction in relation to PA**

#### **5.4 Perceived impact of PA on employee productivity and recalled PA**

Though this thesis aims to look at the perceptions of employees relating to physical activity, however an attempt was made to extrapolate the results by using the concept of recalled physical activity. Respondents were asked to recall if they have been recently performing any physical activity and try to estimate the duration of the activity during a week's period. There were four options provided regarding the duration of their physical activity and were asked to select one. Out of the 87 respondents 67 said they had performed some sort of PA within their daily or weekly routine and therefore those 67 respondents were considered to for this hypothesis. As there is more than one independent variable in this case (four to be exact) one way analysis of variance test was used to check for the hypothesis.

Before performing one way ANOVA it was necessary to check if the sample set fulfills the assumption required to run the test. The first condition of normality assumes that each of the distributions within the sample is normal. Here the independent variable is amount of time spent per week on some form of PA and the sample is divided into sub-samples according to the independent variable. To check for normality of the distributions Shapiro-Wilk normality test was performed as each distribution has degrees of freedom (df) less than 50 (Testing for Normality using SPSS Statistics, 2013). For each distribution to be normal the "sig." value of each distribution needs to be greater than 0.05 and a value below indicates that the distribution deviates significantly from the normal. Luckily each distribution satisfied this condition of normality having significance values much greater than 0.05. The second assumption behind ANOVA is the condition of homoscedasticity or more commonly known of homogeneity of variances of the distributions being involved. To check for this assumption Levene's test was used and homoscedasticity was also proven for the sample set.

The results of ANOVA, which are displayed in table 9, did not come out to be as expected. There was no statistically significant difference to state that employees who positively associate PA with employee productivity are more active in their daily lives as well. As can be seen in the results there was no significance value less than 0.05 to indicate that any of the four independent distribution/groups have different means for the variable

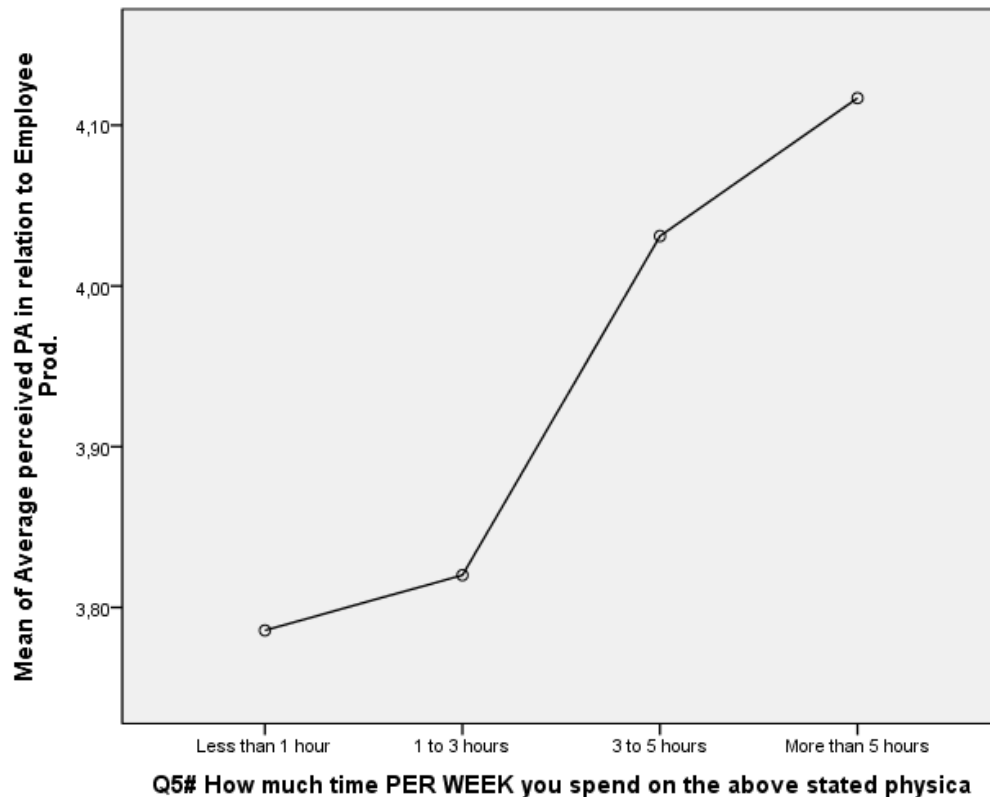
measuring perceived PA in relation to employee productivity at a significance level of 0.05. These results are also verified by the 95 percent confidence intervals for the mean difference of the distributions. All the 95 percent confidence intervals have the value zero within them indicating that the mean value of the variable measuring perceived PA in relation to employee productivity is same for all the groups spending varying number of hours performing some form of PA in their daily lives.

**Table 9. One way ANOVA results comparing different levels of recalled PA**

(I) Time spent on PA per week	(J) Time spent on PA per week	Mean Difference (I-J)	Sig.	95 percent Confidence Interval	
				Lower Bound	Upper Bound
Less than 1 hour	1 to 3 hours	-.03439	<b>.999</b>	-.7881	.7193
	3 to 5 hours	-.24534	<b>.832</b>	-1.0109	.5202
	More than 5 hours	-.33117	<b>.732</b>	-1.1787	.5164
1 to 3 hours	Less than 1 hour	.03439	<b>.999</b>	-.7193	.7881
	3 to 5 hours	-.21095	<b>.645</b>	-.6848	.2629
	More than 5 hours	-.29678	<b>.559</b>	-.8941	.3006
3 to 5 hours	Less than 1 hour	.24534	<b>.832</b>	-.5202	1.0109
	1 to 3 hours	.21095	<b>.645</b>	-.2629	.6848
	More than 5 hours	-.08583	<b>.983</b>	-.6980	.5264
More than 5 hours	Less than 1 hour	.33117	<b>.732</b>	-.5164	1.1787
	1 to 3 hours	.29678	<b>.559</b>	-.3006	.8941
	3 to 5 hours	.08583	<b>.983</b>	-.5264	.6980

Though the results did not come out to be statistically significant enough to show any positive relationship between the variables, still there was some positives to take out of this hypothesis as the mean value of the dependent variable for each distribution did show a positive trend i.e. as time spent on PA was increased the mean value of the dependent variable also increased as can be seen in figure 8.





**Figure 8. Trend-line showing mean values of variable for perceived PA in relation to employee productivity against time spent on PA per week**

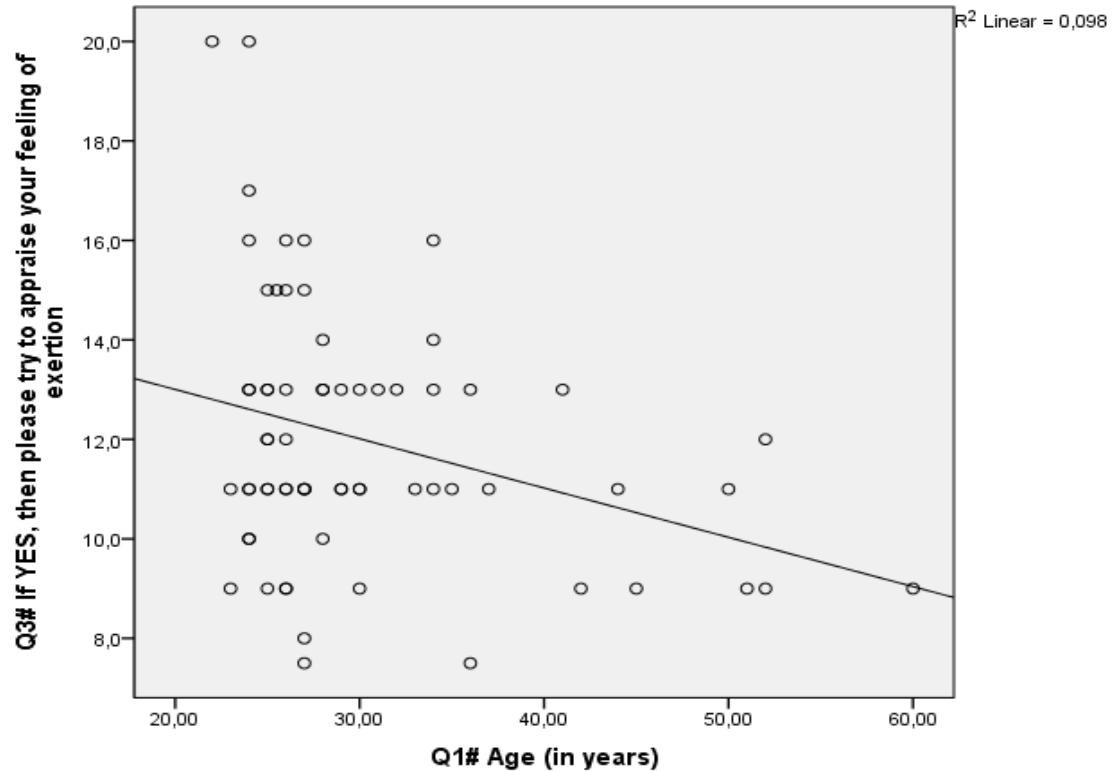
### **5.5 Impact of age on perceived physical exertion levels**

Knowing that age and its impact on physical exertion has not been well researched within Pakistan I felt it necessary to analyze its impact within the scope of this thesis. Although the sample set might be small and have a bias with the majority of respondents below 35 years of age, nonetheless the data seems adequate enough to measure the impact of age on physical exertion if any. Here the independent variable is the age of the respondents while the dependent variable is the perceived physical exertion which the employees choose using the Borg scale of perceived exertion ranging from values from 6 (no exertion at all) to 20 indicating maximum possible exertion. As both the variables are continuous in nature therefore a Pearson correlation test suits best to know if there exists any relationship between the two. Pearson correlation test results generated using SPSS are shown in table

10 and figure 9. As expected the results show an inverse relationship between age and perceived feeling of exertion. Pearson correlation coefficient of  $-0.313$  indicates that age and perceived feeling of exertion have a moderately negative relationship (Nangolo & Musingwini, 2011) for employees working within MNCs in Pakistan. Furthermore a p-value of  $0.005$  indicates that the results are statistically significant and there exist some relationship between the two continuous variables. The result is verified through the scatter plot in figure 9 which show a downward sloping trend line indicating an inverse relationship once again.

**Table 10. Pearson correlation results for Age of respondent against perceived level of physical exertion**

<b>Correlation</b>			
		Age in years	Perceived feeling of exertion (Borg scale from 6-20)
<b>Age in years</b>	Pearson Correlation coefficient	1	<b>-,313**</b>
	P-value		<b>,005</b>
	Sum of Squares and Cross- products	4523,127	<b>-448,149</b>
	Covariance	68,532	<b>-6,790</b>
	N	67	<b>67</b>



**Figure 9. Scatterplot along with trend line showing negative relationship between age and perceived level of physical exertion**

### **5.6 Impact of physical inactivity on exposure to relevant health risks**

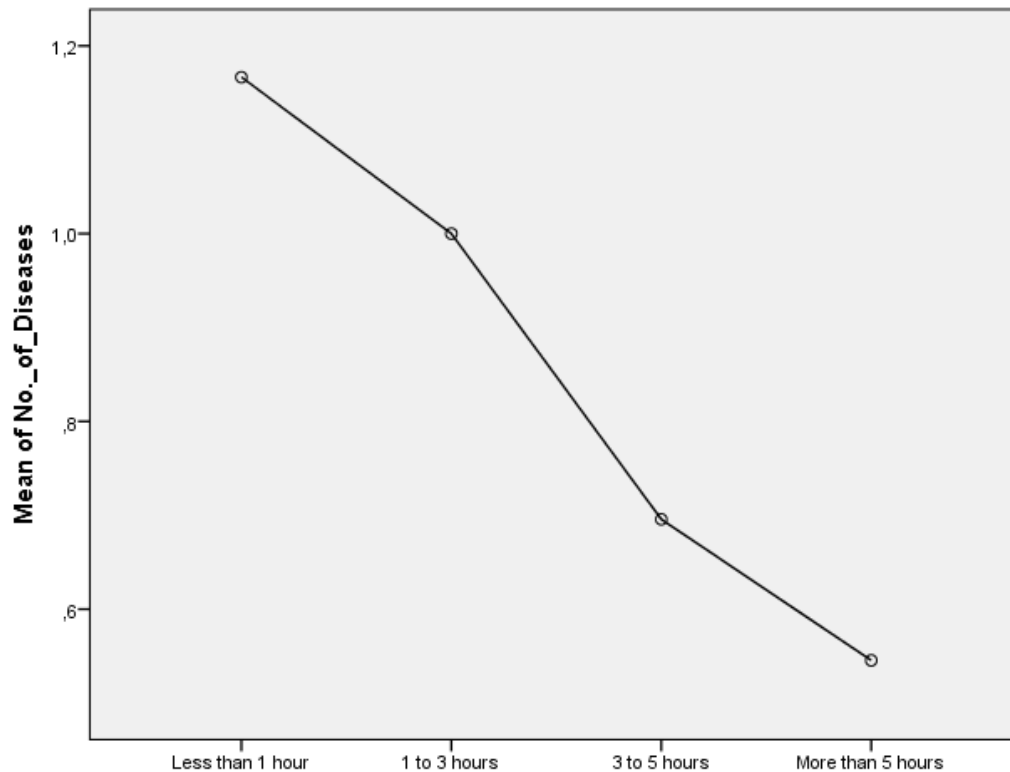
Moving forward the focus is on chronic diseases associated with inactive lifestyle. Being a part of the MNC culture myself the most commonly associated health risks were identified which included hypertension commonly known as high blood pressure, diabetes, lower back pain and obesity/unusual increase in weight. The aim was to see if there exists a pattern associating level of recalled PA with the number of health risks a respondent is exposed to during his or her professional career. The dependent variable in this case is the number of health risks an employee is exposed to and can range from anywhere between 0-4. The independent variables here are the different levels of recalled PA measured in hours spent per week. As required ANOVA was performed on the variables involved and both conditions of normality and homoscedasticity were satisfied by the distributions involved. As can be seen in table 11 there did not seem to be any statistically significant difference

between the numbers of health risks employees got exposed to depending on their PA levels either at a significance level of 0.05 or 0.1.

**Table 11. ANOVA results for number of health risks respondents exposed to depending on recalled PA levels**

Time per week spent on preferred PA (I)	Time per week spent on preferred PA (J)	Mean Difference (I-J)	Sig.	90 percent Confidence Interval	
				Lower Bound	Upper Bound
Less than 1 hour	1 to 3 hours	.167	<b>.975</b>	-.76	1.09
	3 to 5 hours	.471	<b>.647</b>	-.47	1.41
	More than 5 hours	.621	<b>.507</b>	-.42	1.66
1 to 3 hours	Less than 1 hour	-.167	<b>.975</b>	-1.09	.76
	3 to 5 hours	.304	<b>.615</b>	-.28	.89
	More than 5 hours	.455	<b>.474</b>	-.28	1.19
3 to 5 hours	Less than 1 hour	-.471	<b>.647</b>	-1.41	.47
	1 to 3 hours	-.304	<b>.615</b>	-.89	.28
	More than 5 hours	.150	<b>.966</b>	-.60	.90
More than 5 hours	Less than 1 hour	-.621	<b>.507</b>	-1.66	.42
	1 to 3 hours	-.455	<b>.474</b>	-1.19	.28
	3 to 5 hours	-.150	<b>.966</b>	-.90	.60

One thing to notice here is that both the recalled PA levels and health risks exposed to, are reported by the employees themselves and might be subjected to slight bias depending on the respondent. Nonetheless it was observed that the mean value of number of health risks for each category did observe a clear trend in relation to recalled PA levels. Figure 10 shows the output through a scatter plot where a negative relationship between number of health risks and recalled PA level can be observed.



**Figure 10. Scatter-plot displaying negative relationship between mean number of health risks employees are exposed in relation to recalled PA levels**

### 5.7 Impact of age on reported obesity

It was noticed that obesity was the most common health risk employees said that they had been exposed to. This seems understandable as the inactive lifestyle associated with corporate multinational culture directly impact the weight of the employees. Out of 87 of the respondents 29 reported that they had either faced obesity or an unusual increase in weight since they had started working as a professional. Knowing that majority of the respondents were below 35 years of age this statistic seemed quite alarming. To look into it further an independent sample t-test was performed to compare the mean age of people who reported obesity exposure as compared to the mean of sample who did not report being obese or having faced an unusual increase in weight. The results of the independent sample t-test as displayed in table 12 showed a very interesting phenomenon. Due to the p-value for the Levene test being lower than 0.05 equal variances of the two independent

distributions involved were not assumed. The results of the independent sample t-test came out to be statistically significant with a p-value of 0.024. Though the test was conducted at an alpha of 0.1 nonetheless the p-value would have hold significant for an alpha=0.05 as well.

The 90 percent confidence interval ranges from 0.84 to 5.23 years indicating that the employees who did not report obesity had a higher mean age as compared to employees who did report being obese. The 90 percent confidence interval of employees who did not report obesity was 28.9 to 32.7 years while for employees reporting obesity it was 27.7 to 28.8 years. As the data is gathered on perceptions it can be argued that younger employees might seem to be more health conscious and might perceive a smaller increase in weight to be categorized as being obese as compared to the older employees' perceptions. Nonetheless the results indicate an interesting situation where apparently obesity has affected the younger employees more.

**Table 12. Independent sample t-test results to compare mean age of obese and not-obese employees**

Independent Samples Test						
		Levene's Test for Equality of Variances	t-test for Equality of Means			
		p-value (homoscedasticity)	df	P-value (alpha=0.1)	90 percent Confidence Interval of the Difference	
					Lower	Upper
Age (in years)	Equal variances assumed	,000	85	,078	,20609	5,86288
	<b>Equal variances not assumed</b>		81,272	<b>,024</b>	<b>,84115</b>	<b>5,22782</b>

### **5.8 Impact of physical inactivity on annual health expenditure**

Health care costs are considered to be an essential component of costs associated with inactive lifestyle when it comes to employees working in the service industry. Using data gathered through the questionnaire an attempt was made to see if there exists any relationship between the duration of PA and the healthcare costs of employees. Participants of the study were asked if their annual health expenditure had increased, decreased or remained the same over the last two years. Knowing that it is difficult to assess the exact amount of healthcare costs, the data relies heavily on the perceptions of the respondents. Knowing that both the duration of PA and the change in healthcare costs are categorical variables therefore chi-square has been used to look if there exists any dependency between the two variables.

The test could not have been performed using all four categories of the independent variable i.e. duration of PA (less than 1 hour, 1-3 hours, 3-5 hours and more than 5 hours) because the required assumptions behind the test were not met. Therefore categories of the independent variable were combined with one category representing employees that performed up to three hours of PA per week while the second category representing employees performing PA up and above three hours. Using this setting the conditions for the chi-square test were met and table 13 shows the results gathered for the test.

According to the results there exists no relationship between the duration of PA performed by employees and the change in health care cost incurred on themselves during the last two years. A Pearson chi-square significance value of 0.419, which is much greater than the value of  $\alpha=0.5$ , indicates that the two variables involved are independent of each other. This is a surprising result as one would expect that a relationship between level of PA and healthcare costs might exist. Similarly I tried to look if there exists any difference in healthcare costs for employees who performed PA for any duration as compared to employees who did not perform any PA at all. Chi-square test was performed again and the results for the test are displayed in table 14. Once again the results showed that there existed no difference when it came to change in healthcare costs during the last two years for employees who performed any form of PA for any duration and employees who were

completely inactive. A significance value of 0.163 being bigger than  $\alpha=0.5$  indicates independence between the two variables.

**Table 13. Pearson Chi-square test results for duration of PA against change in healthcare costs for employees (N=67)**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1,738 <sup>a</sup>	2	<b>.419</b>
Likelihood Ratio	1,756	2	.416
N of Valid Cases	67		
a. 1 cells (16.7 percent) have expected count less than 5. The minimum expected count is 4.93.			

**Table 14. Pearson Chi-square test results to check for dependency between PA and change in healthcare costs (N=87)**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3,632 <sup>a</sup>	2	<b>.163</b>
Likelihood Ratio	3,673	2	.159
N of Valid Cases	87		
a. 1 cells (16.7 percent) have expected count less than 5. The minimum expected count is 2.53			

### **5.9 Role of PA in presenteeism cost**

As discussed earlier presenteeism is the cost associated with the time lost due to some health condition faced by the employees while on job. In the questionnaire an attempt was made to measure the perceived presenteeism cost by asking employees how many hours per month they believe were lost due to some health risk they have been exposed to since they have started their professional career. In this sub-section I have tried to answer one of the research questions that whether presenteeism cost is higher for employees who have been more inactive in their daily lives or not. As there are more than two options for the independent variable i.e. the duration of PA, therefore a one-way ANOVA was performed



to look if there exists any dependence between the two variables. Before performing the test once again assumptions like normality and homogeneity of variances were checked through q-q plots and Levene's test respectively. Table 15 displays the result of ANOVA generated through SPSS. It was interesting to see that the p-value was 0.448 which is much greater than the chosen value of alpha i.e. 0.05 thus failing to reject the null hypothesis that presenteeism cost and duration of PA are dependent on each other.

**Table 15. One way ANOVA to check dependence of presenteeism cost on duration of PA (N=67)**

ANOVA					
	Sum of Squares	df	Mean Square	F	p-value
Between Groups	302.288	3	100.763	.896	<b>0.448</b>
Within Groups	7086.854	63	112.490		
Total	7389.142	66			

Knowing that duration of PA had no impact on the presenteeism it seemed important to check if any level of PA whatsoever has an impact on the presenteeism cost or not. An independent sample t-test was performed to check whether mean presenteeism cost in terms of hours lost per month differ for employees who did perform some sort of PA against those employees who were completely inactive in their daily routines. Both of the distributions were checked for normality using Shapiro Wilk test. There were a total of 67 employees who were engaged in some sort of PA every week regardless of the intensity of their perceived exertion while on the other hand 20 employees indicated that they did not perform any form of PA in their daily routines. A p-value of 0.913 at a significance level of 0.05 indicated that the results were statistically insignificant to suggest whether there exists any difference between the mean values of hours wasted per month for employees performing PA and employees not engaging in any form of PA. Regardless of the distributions having equal or unequal variances the null hypothesis cannot be rejected as per table 16.

**Table 16. Independent samples t-test to check for differences in presenteeism cost of employees performing PA and employees not engaging in PA (N=87)**

Independent Samples T-test						
		Levene's Test for Equality of Variances	t-test for Equality of Means			
		p-value	df	Sig.(2- tailed)	95 percent Confidence Interval of the Difference	
					Lower	Upper
Presenteeism cost (hours wasted per month)	Equal variances assumed	,166	85	<b>,913</b>	-4,7149	5,2626
	Equal variances not assumed		49,864	,890	-3,7009	4,2487

### 5.10 Role of obesity in presenteeism

Obesity has been reported to be the most common health risks employees believed they were exposed to with one-third of the employees indicating that they were facing it since the start of their careers. Once again an independent sample t-test was performed to see if there exists any difference in mean number of work hours wasted for employees who reported being obese as compared to employees who did not. Levene's test was performed to see if equal variances assumption can be made for the two distributions but a p-value of 0.001 for the Levene's test nullified the assumption of equal variances. As expected the results of the independent samples t-test in table 17 suggested that obesity did impact the presenteeism cost with employees not reporting obesity having lower number of mean hours wasted. A p-value of 0.019 at a significance level of 0.05 verifies that indeed mean of the distributions is different. The 95 percent confidence interval of the difference of the means ranging from -11.9 to -1.1 hours affirms the finding that employees who did not

report obesity had indeed much lower presenteeism cost as compared to presenteeism cost reported by obese employees.

**Table 17. Independent samples T-test to check impact of obesity on presenteeism cost (N=87)**

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	Sig. (2-tailed)	95 percent Confidence Interval of the Difference	
					Lower	Upper
Presenteeism cost (hours wasted per month)	Equal variances assumed	11,496	,001	0.003	-10,7267	-2,2733
	<b>Equal variances not assumed</b>			<b>0.019</b>	<b>-11,8563</b>	<b>-1,1437</b>

## 6 DISCUSSION AND CONCLUSIONS

This thesis aimed to cover various aspects associated with employee productivity within an MNC setting in Pakistan. The vast majority of the research has been based on perceptions of the employees and at times has tried to tie a knot between perceptions and the real-life situation out there as well. To a certain extent invaluable insight has been provided on different aspects of employee productivity by identifying various associated costs linked to sedentary lifestyle. There have been some interesting results that I have come across in the results section, some expected and some unexpected. It is imperative to discuss the rationale behind these results as eventually the message behind the results is more important than what is represented by tables and figures.

### 6.1 Dilemma of PA in Pakistan

This thesis has made an attempt to look at the PA trends in a specific setting in Pakistan. Like in any country white collar employees working in MNCs are a true representation of the middle or upper middle class of the society. Being well educated and being part of a strong organization says a lot about the individual. With almost 50% of the respondents earning over 100,000 Pakistani Rupees per month (equivalent to \$12,000 per annum) the employees working in MNCs in Pakistan represent the educated and reasonably wealthy class of the society. To a certain extent the perceptions they have about PA speaks volume about how PA is perceived in Pakistan. Though the results show that the employees did perceive a positive association between PA and productivity nonetheless it was a completely different story altogether when they were asked about what they believe PA is and how would they define it. One of the participants defined PA as “Activities; done manually, by hands, need physical involvement and exercise.” Another participant stated it to be “Coming to office via stairs”. As this thesis from the very start focused on perceptions it was interesting to see such varied perceptions about the definition of PA. A big chunk of the respondents indicated PA to be any bodily movement that requires

energy. According to this definition sleeping should also be considered PA as the person does burn quite a lot of calories while sleeping.

The worrying point here is that if this what the perception of the educated class is regarding to PA what should one expect from the 50 million illiterate adults of the country (UNESCO, 2012). It is necessary to realize the reason behind such an alarming situation the roots of which lie within the public and private schools in Pakistan. Apart from a handful of pro-active private schools physical education is not been given its due importance. The realization that how important PA is for the body is never instilled in the young educated minds of the country. “Physical education is not given the importance that it deserves. It is still considered a co-curricular activity or a hobby for some. It should be as considered as important as any other subject like English.” (Saeed, 2011). Lack of qualified physical education teachers and the indifferent attitude the society has towards PA has ultimately led to such a situation.

For the women in Pakistan the situation is even more difficult. “In many Indian and Pakistani schools, lack of qualified teachers and facilities, inadequate inspection, perception of physical education as a non-educational fun activity and inferiority to academic subjects, collectively contribute to either minimal provision or to not even being a feature of the curriculum. Girls are discouraged from participating in physical education clubs in many rural areas especially because of what it will do to their bodies (render them “unfeminine”). In Pakistan, cultural and religious constraints limit the scope of physical education for girls, who are not allowed to take part in sports and physical activities except within the four walls of the schools.” (Hardman, 2004). Physically active women being stigmatized by the society is quite common in the rural areas of the country and is still prevalent in the more developed urban areas of the country. It is imperative that PA is taken just as seriously as any other subject at the school, so that the concept of PA and its importance gets instilled in those young minds at an early stage.

## 6.2 Issues with recalled data

During the results an attempt was made to involve recalled levels of PA in a couple research sub-questions to see if there exist any relationship between employees' belief about PA and whether they are true to that belief, by recording their recalled levels and duration of PA. Similarly recalled PA durations were used to see if there exist any association between PA duration and the number of health risks an employee is exposed to. Using recalled data allows the researcher to tackle the issue of practicality and data collection cost issues. But at the same time there is always the inherent chance of the data being bias and misrepresented. "Although self-reports are useful for gaining insight into the physical activity levels of populations, they have the capacity to over- or underestimate true physical activity energy expenditure and rates of inactivity" (Prince, Adamo, Hamel, Hardt, Gorber & Tremblay, 2008). Human beings being inherently imperfect, there is always a chance that the recalled levels of PA might be misrepresented due to inaccurate memory and social desirability (Prince et al., 2008).

Nonetheless an attempt was made during the questionnaire design to avoid the recall bias. All the questions involving recalled PA were adopted from pre-validated surveys. Furthermore before asking the participant about recalled levels of PA they were probed in detail regarding their preferred PA by providing them several choices to make them think deeper when answering question regarding recalled PA later in the questionnaire. The participants were to a certain extent blinded from the sub-hypotheses at hand, which helped in the objectivity of the recalled PA results (Hassan, 2005). Similarly the questionnaire used a systematic approach to prompt and stimulate participants' memories. For example to measure perceived level of physical exertion the Borg scale of perceived exertion was used. But at the same time while asking participants to rate their perceived levels of physical exertion, they were provided with Borg scale rating of common physical activities such as walking and running; they were also told the perceived feeling that comes along with each level of exertion so that while responding they have a clear idea of how to rate their own level of exertion (Richey & Klein, 2009).

### 6.3 The menace of obesity

Though obesity is mostly associated with the developed countries where technological advancements have made lifestyles sedentary but the situation is not much different in urban areas of the developing world either. As it was observed in the data gathered for this thesis that obesity was reported as the most common health risk employees were exposed to in their professional career. An employee working in a multinational company as a white collar employee is typically in a highly urbanized area. Obesity came out to be strongly associated with presenteeism cost directly affecting productivity of the employees. “In South Asia, including Pakistan, social and environmental changes are occurring rapidly, with increasing urbanization, changing lifestyles, higher energy density of diets, and reduced physical activity.” (Nanan, 2002). The reported obesity levels in urban areas in Pakistan was reported to be 22% for men and 37% for women in the age range of 25-44 years old (Nanan, 2002). This is not much different from the results gathered using the sample set in this thesis where 33% of the participating employees reported either being overweight or being obese.

Obesity was reported to be more prevalent in younger employees who were just at the start of their careers. This also points out to the fact that younger adults are more conscious about their health and weight. Whereas adults who have been in their professional life for some time now might consider it to be a normal feature and unconsciously avoid reporting it even if they are overweight or obese by definition. This is an even more serious situation where a serious health risk is not being recognized as one by the subjects themselves and the society at large. Though in a country like Pakistan where poverty and hunger is a major issue, issues like obesity are sometimes brushed under the carpet. At the same time the results indicating that obesity might be a bigger issue in the younger workforce cannot be ignored. One logical reason behind this could be the sudden change in routine when one moves from an academic career to a professional career. From relatively relaxed college life to an almost 50 hours per week routine can have its toll on the individual. The time which used to be spent on either some form of PA or extra-curricular activity is now taken up by the office. It is important to realize that such a sudden change from a relatively active lifestyle to a sedentary lifestyle within the office, needs to be counterbalanced to halt

any progress towards the person becoming overweight or obese. Setting a routine which involves a more healthy lifestyle by squeezing in PA in the work life and going for healthier diets can set the path for a more active and healthy professional career. At the same time it might be initially difficult to make such changes to your routine in a country like Pakistan where being lethargic is considered more of a sub-culture. If the menace of obesity is not tackled at the early part of the professional career than later on the employee might not consider it to be a menace anymore thus posing even greater threat to the health and on-job productivity of the individual.

#### **6.4 Avoiding presenteeism and the social stigma associated with absenteeism**

Though within the limited scope of this thesis there was not enough evidence to support the claim whether duration of PA is associated with presenteeism, nonetheless it was interesting to notice that according to the participants' perception in total 500 hours were lost as presenteeism cost for the 87 employees in total, averaging out to an approximately six hours per employee per month lost due to presenteeism. Like in most MNCs productivity is associated with being present at your desk rather than the marginal output an employee adds on to the company. "Businesses use absenteeism rates as an indicator of engagement and productivity because it's easy to quantify. If your employee is at their desk or on the work site, you can tick a box." (EHSToday, 2016.) An employee's presence at work does not necessarily mean that he or she is performing well as well. Employers need to realize that there is exist a probability of the employee being mentally absent regardless of him or her being physically present. "Unlike absenteeism, presenteeism isn't always apparent. You know when someone doesn't show up for work, but you often can't tell when-or how much-illness or a medical condition hinders someone's performance." (Hemp, 2004.)

The problem lies with the social stigma and job insecurity associated with absenteeism. In a country like Pakistan where the job market is extremely competitive as every year hundreds of thousands of students are graduating with a college degree, the current job holders always feel the pressure of being challenged by others for the same position. The situation is even more intense in MNCs where the competition is cut throat. In such instances employees prefer to avoid being absent from office even



if they are sick so as to avoid any chances of any disciplinary action or bad reputation amongst the bosses. (Quazi, 2013, 130-150.) It is necessary for the employers to realize that the cost associated with presenteeism is even higher than absenteeism and the worst part is the employer can never fully estimate the presenteeism cost as nobody knows how inefficient the employee is and how much his or her inefficiency is costing the organization in monetary terms. Therefore it is absolutely necessary to develop a culture of acceptance towards absenteeism and rather target the cause behind presenteeism or absenteeism such as obesity or other common health risks associated with sedentary office lifestyle.

### **6.5 Limitation of this Research and Recommended future Research**

Finally there are quite a few limitations within the thesis that need to be considered. Firstly this thesis does not focus on all the MNCs operating within Pakistan. Only those MNCs were targeted where the HR was supportive or where I have had friends or ex-colleagues employed, who helped in getting in touch with the relevant people within the organizations. Secondly though most of the MNCs operating in Pakistan have English as their working language and therefore the questionnaire was also developed in English but English is not the mother tongue of any of the participants of this study. This might have caused a slight bias as people who did not feel comfortable in filling out the questionnaire in English could not have participated. Thirdly the sample set for this study was quite small. Though the aim was to get somewhere around a couple of hundred employees for this study but eventually only 87 employees filled out the questionnaire. This might have resulted in some unexpected results which could have been on the other side of the spectrum if there was a bigger sample set. Lastly though the thesis tried to cover several aspects relating to employee productivity such as presenteeism, common health risks and healthcare costs, still aspects like absenteeism and impact of long working hours were not included in the scope of the thesis; including them could have helped get more insight into the current situation.

This is a pioneering research in the domain of PA and employee productivity in Pakistan and can open up doors for quite a few interesting research topics. Though it has tried to cover a few aspects in relation to PA for MNC employees, a lot of further detailed research

can still be carried out in this domain. Using this research as a reference, a more detailed research using experimental research methods can be implemented for a bigger target group. Rather than going for employees' perceptions, future researchers can try to implement a control experiment where participants' on-job productivity is measured through certain parameters at various intervals within the research. Providing the participants with a detailed daily PA plan and checking the impact it can have on their productivity pre and post treatment can help tell the true impact PA has on employee health and productivity. Though for such research to take place it is more feasible that the researchers do not face any geographical barriers and are in constant contact with the participants of the study.

To sum it all up, this thesis has tried to take a peek into the current PA trends of employees working within MNCs in Pakistan. The thesis has primarily focused on participants' perceptions to try to answer questions related to employee productivity in association to PA and have tried to touch other aspects related to inactive lifestyle such as common health risks, healthcare costs and presenteeism cost. The research has provided a variety of results using data gathered via an e-questionnaire and analyzed primarily through SPSS. This research has opened the door for future research in the neglected domain of health promotion within Pakistan. It would be beneficial for future researchers take into consideration this research if they intend to explore relevant areas of research in Pakistan. Lastly employers should also try to utilize such pieces of research to improve the overall efficiency of their workforce.

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## Appendices

### Appendix 1. Master's Thesis e-Questionnaire

#### Section 1: Background Information

Please fill out the following information before you move to the next section:

- a. Age: \_\_\_\_\_ years
- b. Gender: \_\_\_\_\_
- c. Marital Status: \_\_\_\_\_
- d. Family Size: \_\_\_\_\_
- e. Work Experience: \_\_\_\_\_ years
- f. Salary (per month):
  - i. Less than PKR 50,000 Pakistani Rupee
  - ii. 50,000 – 100,000 Pakistani Rupee
  - iii. 100,000-150,000 Pakistani Rupee
  - iv. 150,000-200,000 Pakistani Rupee
  - v. Above 200,000 Pakistani Rupee

#### Section 2: Level of Physical Activity

Q1. How do you define Physical Activity?

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Q2. Do you spend any time doing any sort of physical activity either in home or out of home?

- a. Yes
- b. No

Q3. If **yes**, then please try to appraise your feeling of exertion as honestly as possible, without thinking about what the actual physical load is. Your own feeling of effort and exertion is important, not how it compares to other people. Look at the scales and the expressions and then give a number.

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*Note: 9 corresponds to "very light" exercise. For a healthy person, it is like walking slowly at his or her own pace for a few minutes*

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*13 on the scale is "somewhat hard" exercise, but it still feels OK to continue.*

*17 on the scale is "very hard" is very strenuous. A healthy person can still go on, but he or she really has to push him- or herself. It feels very heavy, and the person is very tired.*

*19 on the scale is an extremely strenuous exercise level. For most people this is the most strenuous exercise they have ever experienced.*

---

Sr. #	Scale (From 6 to 20) (SELECT ONE)	What it represents
1	6	No exertion at all
2	7	-
3	7.5	Extremely light activity
4	8	-
5	9	Very light activity
6	10	-
7	11	Light activity
8	12	-
9	13	Somewhat hard activity
10	14	-
11	15	Hard activity
12	16	-
13	17	Very hard activity
14	18	-
15	19	Extremely Hard activity
16	20	Maximum possible exertion

**Q4.** How much time per week you spend on the above physical activity in Q3?

- a. Less than 1 hour
- b. 1 to 3 hours
- c. 3 to 5 hours
- d. More than 5 hours

**Q5.** Which form of exercise or physical activity do you normally spend time on?

1. Cricket
  2. Football
  3. Gym
  4. Running/Jogging
  5. Walking
  6. Cycling
  7. Others (Please Specify):
-

### Section 3: Employee perception regarding Physical Activity and its effects on work productivity

Do you believe being physically active and exercising regularly will help you:-

*SD D UD A SA*

- I To be more productive at work*
- II To be more focused during meetings*
- III To think more clearly about work-related problems*
- IV To concentrate on work tasks*
- V To enjoy work better*
- VI To relate better to co-workers*
- VII To feel less drained out nearing the end of day's work*

---

*SD = Strongly Disagree; D = Disagree; UD = Undecided; A = Agree; SA = Strongly Agree*

---

### Section 4: Employee perception regarding Physical Activity and its effects on life satisfaction

Do you believe being physically active and exercising regularly will help you:-

*SD D UD A SA*

- I To be more satisfied with life in general*
- II To be motivated to keep in touch with friends*
- III To improve your relationship with your immediate*

*family*

IV *To be more satisfied with your financial situations*

V *To enjoy work better*

VI *To enjoy leisure activities in a better manner*

---

*SD = Strongly Disagree; D = Disagree; UD = Undecided; A = Agree; SA = Strongly Agree*

---

### **Section 5: Employee physical inactivity related health problems and associated issues**

Q1. After starting your working career have you faced any of the following health problems?

- a. High Blood Pressure
- b. Diabetes
- c. Lower Back Pain
- d. Obesity/Unusual increase in weight
- e. None of these

If you have faced any of the above health problems then please answer to the following:

Q2. Does any of the above health conditions effect your performance at work?

- a. Yes
- b. No

Q3. While at work, for how many hours do(es) the above selected health condition(s) effect negatively your on job performance **per month**? (**Note, an entire work day lost is to be considered equivalent to 8 hours lost**)

\_\_\_\_\_ **hours/month**

Q4. What is your **annual** medical expenditure on the above selected health condition(s)?

(Note: please consider the expenditure on **yourself only**)

- a. Less than 5,000 Pakistani Rupees
- b. 5,000-25,000 Pakistani Rupees
- c. 25,000-50,000 Pakistani Rupees
- d. More than 50,000 Pakistani Rupees

Q5. Has your annual medical expenditure on the selected health condition(s)

- a. Increased
- b. Remained the same
- c. Decreased

during the last two years?