The Effect of Participation in Youth Sports on Women's Economic Success

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Spring 2014

I. Introduction

Sports are often cited as providing rising leaders with the skills necessary to succeed in future careers. However, is this actually a valid claim that skills gained through sports directly correlate to higher initial and overall earnings than those who did not participate in sports? Participation in sports can start as early as Pre-K for young girls and boys, but not all youth athletes start this early, as many participants join in older years when competition increases.

Studies have shown that participation in varsity high school athletics can lead to success in life in regards to higher earnings and a large percentage of promotions within companies. Although many athletes do continue or join sports teams in high school, there are approximately 35 million youths who participate in sports each year, with almost 50% of participants being young girls (Michigan State). Similarly to the trend with youth participants in sports, the number of women attending college and joining the work force has risen dramatically in past years as well. Not only are more women joining the work force, but they are becoming high-ranking members of the corporate community.

Is there a correlation between the recent increase in young girl's participation in sports to that of career success later in life? This paper argues that there is in fact a correlation between participating in youth athletics as a girl to that of higher earnings in career paths. This paper explores the possible link between participation in athletics with that of salaries, skills gained, and overall career success.

II. Literature Review

The idea that participation in sports leading to economic success in later careers is a relatively new concept, however, there have been many studies exploring the benefits of participation in sports more broadly understood, either for both genders or some studies specifically aim towards examining the benefits of women's sports. These benefits are more social or mental in nature, and do not discuss further economic consequences. The literature spans other nations as well as the US.

Lester Coleman, Louise Cox and Debi Roker (2008) studied young girls ages 15-19 in the United Kingdom to examine the differences between girls who 'always' participate in organized sports versus girls who 'never' participate. Many of the results they found were not surprising, as the study suggests participation in sports improves social skills as well as promoting dedication and team-building, which are necessary life skills (Coleman, Cox, and Roker, 2008).

The analysis by the participants themselves, in terms of psychological and social comparisons, was particularly interesting. Psychologically, both the 'always' and the 'never' participants viewed organized sports teams in a positive light. However, the 'never' participants believed that in order to play on a sports team one must "look the part" in order to both feel a part of the team as well as to look nice in the uniform (2008). This statement does illustrate a cyclical issue. Not wanting to participate in sports due to low self-esteem does nothing to help promote or advance the girl's self-estimation. Thus, her self-esteem will never rise and will hurt her later in life.

Socially, the girls reported that the reason they did or did not participate in sports is because their friend group did or did not participate in sports. However, the girls also reported that if their friend group suddenly stopped participating in sports or suddenly started participating, then they would reconsider their current activity level to mirror their friends (2008). The ‘never’ participants’ responses were unsurprising, but the ‘always’ responses were more unexpected. Is a girl’s social group the main, if not only, main driver influencing sports participation?

The first article’s ending discussion about sports participation and self-esteem prompted me to look further into studies that have directly addressed how sports participation impacts self-esteem. Sara Pedersen of the University of Montreal and Edward Seidman of the William T. Grant Foundation (2004) researched the question of how sports participation affects self-esteem. Pedersen and Seidman specifically studied girls in urban areas, as opposed to all areas.

The authors created an evaluation of girls in team sports based on prior research. The evaluation stated that involvement in any time of physical sport leads to higher self-esteem, a more supportive peer network, higher academic achievement, sharper decision-making skills, and that team sports enhance these skills even more so than individual sports due to regular peer interaction and involvement (Pedersen and Seidman, 2004). See table 1. However, as of 2002, “approximately one-third to one-half of middle adolescent girls report no physical activity outside of required physical education class” (2004). The study stated that girls tend to lose interest in athletics at a higher rate than boys, and despite Title IX, still have fewer athletic opportunities than boys (2004).

There were two waves of surveying girls in urban districts to discover if participation in team sports at an early age relates to self-esteem in middle adolescence, and if higher levels of

achievement at an early age lead to higher self-esteem later (Pedersen and Seidman, 2004). Pedersen and Seidman (2004) found their hypothesis to be true as higher levels of achievement led to greater reported levels of self-esteem. The average age of wave 3 was 13.15 years whereas the average age of wave 4 was 16.43 years (2004).

The study discovered much more than just participation in sports leading to higher levels of self-esteem. Achievement in sports is the main factor in establishing high levels of self-esteem, particularly if the achievements can occur at a younger age. Pedersen and Seidman's study relates to this paper as it studies the longitudinal affects of sports participation. Pedersen and Seidman's is one of the few studies that had the participants look back reflectively in order to test the hypothesis.

The issue of finding the benefits in young girls participating in organized sports has become a governmental issue as well. The World Health Organization (WHO) ran a study in 2013 to discover benefits from around the world. The WHO organized the benefits into five different categories: physical, mental, educational development, social inclusion, and reproductive health (2013). Some more specific benefits that WHO (2013) found for young girls who participated in sports were a better quality of life, reduction of diseases, higher self-esteem, a lower risk of developing anxiety or eating disorders, greater attentiveness in the classroom, lower risk of pregnancy, and higher feelings of empowerment, among other benefits. WHO (2013) based these results on data from different studies around the world. See table 2. It should be noted that all of these studies reveal a trend of decreasing participation in physical activity with age.

The final aspect of The World Health Organization's (2013) analysis of participation in sports reflects on the myth that there is a genetic predisposition that reveals the level of

participation in sports a young girl will display. The Organization analyzed the world studies and decided upon a myriad of factors that influence participation. See table 3.

One of the leading foundations for encouraging young girls to be physically active is the Women's Sports Foundation. In 2004, the Foundation released *Her Life Depends On It* (Sabo, Miller, Melnick, and Heywood, 2004), which confirmed that physical activity, especially through sports participation, is the major factor that creates a foundation for girls to lead healthy lives as the risk of facing just about every illness, disorder, and illegal or dangerous activity was greatly reduced for the girls who were physically active.

However, because of technological advancements, progress within education, and other overall improvements in society, the Foundation led another study in 2009 to see if their findings were still relevant. *Her Life Depends on It II* asserted that "research affirms, even more definitively than five years ago, that engagement in moderate and consistent levels of physical activity and sport for girls and women is essential to good health and well-being," (Staurowsky, E. J., DeSousa, M. J., Ducher, G., Gentner, N., Miller, K., E., Shakib, S., Theberge, N., & Williams, N., 2009). The 2009 update of *Her Life Depends on It* devoted an entire section to the academic gains that young girls can reap by participating in athletics. These gains vary from better grades and increased attendance, all the way to a greater desire than that of non-athletes to attend college (2009). Athletes having the desire to go to college already puts them in line to see higher wages in the long-term. The document cites many studies to back up their claims on education, such as the study by Lipscomb in 2006 that found high school athletes to be 5% more likely to have the desire to further their education at college than their peers who were not involved in athletic pursuits, but many of which could be found in more intellectual extra-curriculars such as debate or band (2006). The same study by Lipscomb also showed that the

students who were involved in high school sports scored 2% higher on standardized tests for math than students who were not involved in high school sports (2006).

The linking of sports to academic success is not an entirely new concept for researchers to investigate. An intriguing finding was that of a positive relationship between sports participation and academic accomplishments (Staurowsky et al, 2009). According to a study by Troutman and Dufur (2007), girls that participate in competitive sports on the high school level are more likely to finish college than girls who did not participate in sports in high school. Not only that, but some studies suggest there is a positive correlation between sports participation and wages (Barron, Ewing, & Waddell, 2000; Curtis, McTeen, & White, 2003; Ewing, 1995, 2007; Howell, Miracle, & Rees, 1984).

The study by Barron, Ewing, and Waddell (2000), utilized data provided by the National Longitudinal Survey of Youth, and determined that men who participated in high school sports are no more likely to be employed than men who did not participate in high school sports. However, compensation is where the major difference lies as the men who participate in high school sports had 12% and 32% higher wages (2000). See table 4 for data. There was a lack of female participation in the NLSY as women, the main focus of this paper, were not taken into account in this study. Also, the only sports that were taken into consideration were that of high school sports, and the number of sports teams was not taken into consideration either. Thus, the study was beneficial, but different as to what this paper achieves by focusing on women's participation in athletics, particularly in the youth sector.

Another interesting study with some similarities to this paper was one by Sandra L. Hanson and Rebecca S. Kraus (1998). Hanson and Kraus investigated to see if there was a relationship between sports participation and a better performance in the field of science. They

utilized data collected from the HSB that included 11,682 high school students to report on their sports activities as well as their experience in science. Controls were established for demographics, family characteristics, school variables and individual characteristics such as grades and self-concept (1998).

Their results showed that by senior year, 45% of male students participate in varsity sports versus only 26% of female students (1998). In regards to science, women's participation in sports led to a positive experience with science unlike that of men (1998). The authors feel a reason for this could be that the spirit of competition and confidence that is often associated with sports participation translates over to science for women, as at the time of the study were not given as many opportunities with sports participation and thus reaped more benefits than males. One of the most interesting findings of the study was that women who participated in more stereotypically feminine sports such as cheerleading had a more negative attitude towards science. See table 5 for data results.

The majority of these prior studies hit on at least one or two areas that this paper is investigating, be it female sports participation or youth participation or higher earnings and success for high school athletes. Despite all the positive results shown in previous studies, not every study has trended in as positive of a direction. The Women's Sports Foundation commissioned a school-based survey in 2008 that yielded a nationwide sample of over two thousand 3rd through 12th grade students. Phone interviews were conducted in conjunction to the survey with both the students and the parents to learn more about involvement in sports. This study, controlled by Sabo and Veliz, led to some conclusions about the gender participation within youth sports.

The first conclusion is that there is a vast gender gap for youth participation. The gender

gap is not equally dispersed in all areas, as wealthier areas tend to provide better access for young girls who want to become involved in sports. Another conclusion from the survey showed that girls have the opportunity to start playing organized sports at a later age than boys, as girls are first allowed to participate at age 7.4 compared to 6.8 for boys (Sabo and Veliz, 2008). Sabo and Veliz believe this late start sets young girls up for failure during the transition to middle school sports, which is why by age fourteen, girls drop out of sports at two times the rate of boys (2008). The World Health Organization also discovered that being overly involved in sports can be just as detrimental for girls as being under involved in sports, and many young girls have difficulty finding the balance of just perfectly involved. The injuries, pressure, and stress that arise from being overly involved are other reasons why girls tend to quit sports earlier than boys. Even moving forward to high school years, girls have 1.3 million fewer opportunities to play sports in high school than their male counterparts have. When the opportunities are there, the quality of their experience vastly decreases for girls. Equipment, facilities, coaches and even the basic programs themselves do not receive as much funding as male sports do, and many programs are even cut due to school budget cut backs from the recession (2008). Despite many gains made from legislation such as Title IX, participation in youth sports for young girls has decreased in the past decade. 37% of all youth athletes were female in 1997, whereas in 2008 only 34% of the athletes were female (Report on Trends and Participation in Organized Youth Sports, 2008).

The desire to get girls involved in sports is there, as many organizations and female mentorship programs have main missions of getting young girls involved in some sort of athletic endeavor to help build skills such as teamwork, confidence, and positive self-esteem; all of which are crucial skills for developing in a career path. Despite the multitude of studies that

prove why sports are beneficial for all participants, or why they are beneficial for high school students, there are seldom studies that show the benefits of youth sport participation. Why then, do parents force their children, especially girls, to play a multitude of different sports at such a young age? There must be true and lasting benefits if millions of youth are signed up for organized sports before they even have a true interest and can decide for themselves. This paper hopes to examine the impact that sports, particularly youth sports, has on participants, particularly females, in the long run in terms of economic success.

III. Model and Data Sources

The model examines various factors that have been attributed to economic success, as well as different measures of economic success. A Qualtrics survey was sent to a random selection of 1,000 School of Business alumni from The College of New Jersey to participate for data collection. Out of the approximately 1,000 alumni e-mailed, 369 alumni volunteered to provide personal data for the study. Questions asked in the survey consisted of demographics (gender, race, age), economic conditions (first starting salary, current salary, occupation), education information (highest education level, major, grade point average), sports data (did you ever play on an organized sports team, what grades were you involved in sports, total years participated in sports, number of sports teams per year), and qualitative data (ranking of skills gained from sports, any additional thoughts about how sports participation impacted your career path).

These specific characteristics were asked as the sports participation data, the education data, and the demographic data all influence the economic data that the model examines. The

qualitative data was used for further insight into personal beliefs and testimonies of participants about both the positive and negative components of sports participation on economic success, as well as to provide a way for participants to contribute anything that was left out of the survey. The purpose of the study is to see if there is a link between participation in youth sports, particularly for females, and economic success in later career paths.

The dependent variables for the model are the starting salaries of the participants as well as the current salaries of the participants. Both of these dependent variables were run in two separate models. In the survey, participants selected a salary range for both current and starting salary, as well as the year in which they received their first job offer. When all data was collected, the average was taken of each $10,000 range, and the average was used as the specific number for each range selection. Also, the United States' Bureau of Labor Statistics' CPI Inflation Calculator was utilized to create the real first starting salary in regards to the current price level of 2014. The Bureau of Labor Statistics was also utilized to access the average overall salary for every year that a participant received their first job offer. These average salaries per year were again put into the CPI Inflation Calculator to determine the overall economic average salary of each year at the price level of 2014. To reduce bias in the model, the log was taken of each of the real variables, and the log of the real initial starting salary and current salary were what was finally used as the dependent variables of the two models.

The independent variables for each of the models consisted of gender, race, current age, highest education level, years since graduation, major, grade point average, overall sports participation, grades participated in sports, total years participating, number of teams per year, and occupation. All of the variables were chosen as a reflection of the literature mentioned before, as well as through careful analysis of known and unknown factors influencing salaries.

Gender, race, and current age were three important demographic characteristics that are not as outright discussed for influencing salaries. Gender was crucial to the study as one of the main purposes is to discover not only if youth sports participation influences higher economic earnings, but if youth sports participation for females is prominent in influence than for male counterparts. A dummy variable of female=1 was utilized for both models. Race worked similarly to gender as a dummy variable with choices such as Caucasian, African America, Hispanic, East and South Asia, Indian, immigrant, and other. The control group was the Caucasian ethnicity, as the majority of participants indicated they identify as that race. Multiple dummy variables were set up for the other races that received a significant amount of data collection from participants. Race became a variable for the model after some of the literature review indicated that prior studies have found that race has an impact in higher or lower salaries for individuals. Current age was another demographic factor that was relevant to the model, more so for current salary. On a common knowledge level, a person who is older is more likely to have a higher salary than a person just starting out in the work force. Thus, current age was an important characteristic to use in the model to remove any bias that could be attributed to the age differences and time in the work force amongst participants.

The education variables that were deemed independent are highest education level, years since graduation, major, and grade point average. The choices for highest education level completed were high school, some college, Bachelor's degree, Master's degree, and Doctorate. Similar to race, dummy variables were established for each of the significant education levels to determine if furthering education plays more or less of an impact on salaries than the other variables such as sports participation or gender.

For the variable about major, participants were asked to indicate only what their major

was at their highest education level. These majors consisted of all programs outside of typical business majors, as there is a trend in higher levels of education straying away from their original major. Separate dummy variables were established for the four majors with a high enough level of respondents, which were Science, Math and Technology, Public and Social Service, Business Management or Marketing, and Business, Finance and or Accounting. Along with the major of highest education level, current occupation is another independent variable. Twenty-two occupation fields, as described by the Bureau of Labor Statistics' Standard Occupational Classification guide, were provided for participants to indicate their current field. This variable was used for some instances with the model of current salary. Only six categories received enough participants to be deemed statistically significant, and these were again given a separate dummy variable per occupation. The six significant occupations are management occupations, business and financial operations, legal occupations, computer and math occupations, the education, library, and training field, and sales related occupations. These fields vary distinctly from pure business fields, which was another way the model of current salary eliminated biased results.

Another education-related variable was grade point average, which is a numerical factor based on the traditional 4.0 scale. Participants were asked to approximate their final grade point average of their highest education level to its closest sector. Each sector varied by 0.5, so participants could select 4.0, 3.5, 3.0, and so on. The grade point averages were crucial for the comparison of sports, an outside the classroom experience, versus true educational measures. The last educational variable was years since graduation. Years since graduation is a variable only used for the model for current salary, and this again eliminated bias that could be created due to a discrepancy in the ages of the participants.

The final category of independent variables was related to various levels of participation in sports. Participants were asked a yes or no question about if they had played on an organized sports team, both inter-school and intramural, prior to high school. This is the time frame that the study classifies as overall youth sports. Another question broke down sports participation into specific grade subsections to be analyzed further than just overall youth sports participation. These subsections were preschool, kindergarten through fifth grade, sixth grade through eighth grade, ninth grade through twelfth, and never participated. Participants were asked to select all that applied. This specific distribution choice was selected as most townships break their schooling up kindergarten through fifth grade correlating to elementary school, sixth through eighth grades correlating to middle school, and high school correlates to ninth through twelfth. Even if a participant only played on a sports team for one season out of that time frame, the model still qualifies it as playing a sport during that schooling subsection.

As there were participants who only played a season or two during a particular school subsection, the questions of number of sports teams per year on average and number of years participating in organized sports helped to create independent variables that could isolate a coincidental athlete from those who considered themselves more of a true athlete. The total number of years participating ranged from zero to ten or more, as anything more than ten years of organized sports leaves just as significant of an effect as ten years flat does. The number of sports teams per year ranged from zero to four or more to correlate with the four seasons. Some true athletes may play more than one sport a season, or play on more than one team for the same sport, although this is certainly not the average participants situation.

The qualitative data consisted of ranking specific skills the participant believed they gained due to sports participation on a scale of one to ten with ten being completely attributed to

sports. The skills listed for ranking were teamwork, confidence, hard work, discipline, leadership, time management, determination, and goal setting. There was also a yes or no question if participants believed attributes learned from participating in sports directly correlated to their individual success later in life, and if participants believed there were other attributes gained from participating in sports they were asked in an open ended format what these characteristics were. The data collected throughout the survey was a good mix of both proven and experimental information as to what attributes to higher levels of economic success in life.

IV. The Model and Results

Multiple Regression

The two initial models were set up with regressions as

RealFirstSalary = f(bachelors, masters, doctorate, female, science/math/technology degree, public/social services degree, business/finance/accounting degree, grade point average, played youth sports, played preschool sports, played elementary sports, played middle school sports, high school sports, years on sports teams, teams per year. management occupation, finance occupation, computer/math occupation, legal occupation, sales occupation)

and

CurrentSalary= f(bachelors, masters, doctorate, science/math/technology degree, public/social services degree, business/finance/accounting degree, grade point average, played youth sports, played preschool sports, played elementary sports, played middle school sports, years on sports teams, management occupation, finance occupation, computer/math occupation, legal occupation, sales occupation).

It is predicted that some of these variables will have a positive relationship with the starting and current salary, some will have a negative relationship, and some will not be significant enough to have any relationship. The higher education levels of Masters and Doctorate are predicted to have a larger and more positive impact than the just the Bachelors degree. It is also predicted that no specific major will have a significant impact on salary, as the overall education will be the education variable that is significant. Playing youth sports such as overall youth, pre-school, and elementary sports are predicted to have a positive relationship, while middle school sports are predicted to be insignificant. Lastly, the occupations that traditionally have higher salaries such as finance, computer/math, and legal occupations are expected to have a more positive and significant impact than the other occupations. The variable coefficient predictions can be seen in Table 6.

The model for real first salary resulted in a low F-statistic, 1.73 (significant at the 3 percent level), and R^2, .1083. Despite the models overall low significance, played sports and playing sports in preschool were particularly significant with t-statistics of 2.19 and 2.36 respectively, as well as the sales occupation with a t-statistic of 2.23 (Table 7). The parallel model for current salary however was overall significant at the 1 percent level with F-statistic, 8.84 and R^2, .3949. Many of the independent variables yielded significant results, such as years since graduation (t-statistic of 8.27), bachelors degree (t-statistic of 4.34), masters degree (t-statistic of 4.72), doctorate degree (t-statistic of 3.47), female (t-statistic of 2.78), grade point average (t-statistic of 2.45), management occupation (t-statistic of 4.27), finance occupation (t-statistic of 4.17), computer/math occupation (t-statistic of 3.26), and sales occupation (t-statistic of 3.96) (Table 8).

As one model was significant overall and one model was not at conventional levels, a

Breusch-Pagan test was run to check for heteroskedasticity. The results of the test indicated that the model did in fact have heteroskedasticity and needed to be reestimated to correct for this (Table 9). Due to the initial heteroskedasticity in the model, robust estimation was run for the remaining tests. A log of both the real first salary and the current salary dependent variables was taken to further reduce heteroskedasticity.

The first salary model's overall significance increased slightly with R^2, .1114, but this is still not strong overall explanation (Table 10). The log of the average real salary per year was then added as an independent variable for the first salary model. The average real salary per year was utilized to help compare the starting salaries of participants to the average salary in the United States during the year the participant starting working. This comparison is necessary to help better understand the significance of a participants starting salary when compared holistically to that of the average salary in the United States during a particular starting year. The Bureau of Labor Statistics was utilized to find the average salary in the United States at each year a participant indicated they entered the work force. These average salaries per year were again put into the CPI Inflation Calculator to determine the overall economic average salary of each year at the price level in 2014. A log was taken of this variable to better reduce bias in the equation.

The new first salary model had an increased R^2 to .1284, and the F-statistic of 2.69 demonstrated the overall significance of the real first salary model, even though not very compelling with such a low R^2. These new models also lowered the individual significance of playing youth sports and playing sports in preschool with t-statistics of 1.97 and 2.65 respectively (Table 11), although still in the realm of respectable significance.

Many more attempts failed to yield any significant results for the real first salary model,

so further analysis focused on current salary. A major factor behind these findings may be that the majority of all starting salaries are standardized for companies and non-negotiable. Research has shown that the majority of companies offer the same starting salary regardless of the candidate's characteristics, especially when the candidate is first entering the work force out of college, as 87% of participants of this Qualtrics survey did.

The main regression model for the log of the current salary proved to be overall significant with F-statistic, 8.29 and R^2, .3798. Individually, the only independent variables that proved to be significant in this model were years since graduation, bachelor's degree, masters degree, doctorate degree, female, grade point average, management occupation, finance occupation, computer/math occupation, and sales occupation. It is important to note that in this model, playing youth sports, pre-school sports, and elementary school sports yield negative t-statistics (Table 12). The negative results show that in this model, playing any youth sport will lead to lower current salaries. A reason behind the low significance of the sports variables could be due to collinearity, as the tendency for these variables to be insignificant suggests that these dependent variables, particularly pre-school and elementary school sports, have a linear relationship.

When the initial model is manipulated through the addition of supplementary independent variables as well as the removal of insignificant variables, the results indicate that elementary school sports have a significant negative contribution to current salaries, with a t-statistic of -2.85 (Table 13). This is interesting to note as no other age brackets had quite as negative of a reaction as this school bracket. This is believed to be due to other variables picking up the effects in a stronger way. As the literature above mentioned, sports participation leads to greater interest and determination to attend higher education. It is likely that elementary school

sports participation is correlated with the different degrees, and they are just the variables that show stronger and more positive significance on current salary. No other regression run yielded this high of a negative t-statistic for elementary school sports, and so while this is important to note, it is not deemed to be meaningful.

To better understand the current salary model, it was important to isolate correlations between the independent variables that worked together to yield results. Thus, the following interaction terms were generated:

WomenSports= female*played sports

FemalePreK= female*played pre-school

FemaleK5Sport= female*played elementary school

FemaleMiddle = female* played middle school

FemaleHS = female*played high school

WomenNoSports= female*played no sports

When WomenNoSports was added to the current salary model with the most significant variables, WomenNoSports yielded a significant negative t-statistic of -2.01. The negative significance of this variable demonstrates that women who do not participate in youth sports have a negative correlation to higher current salaries than women who do participate (Table 14). Other regression equations that include the variable WomenSports indicate that females who participate in sports have a significant positive correlation to current salaries, such as the 2.07 t-statistic for WomenSports in Table 15. Although both isolated individual sports participation, and the combination of female with a particular grade of sports did not yield significant results, the finding that WomenSports yields significant positive results on current salary, and WomenNoSports yields significant negative results on current salary demonstrate that

participating in some form of youth organized sports for a female, regardless of the age or duration played, will benefit women later in life with higher economic success.

V. Qualitative Data

Aside from the purely economic models, the qualitative responses also help to add more insight into benefits gained from sports participation. In the ranking of skills gained through sports participation, no skill averaged less than 6.48 on a scale of one to ten, with ten being the skill was gained exclusive from sports. Teamwork had the highest overall average value with a 7.59, and time management came in last with 6.48 (Table 16). Aside from the eight skills that participants had to rank, 77% of participants also believe that attributes learned specifically from participation in some sort of organized sport directly correlate to success later in life (Table 17).

The open-ended section revealed other qualitative insight into the participant's beliefs about sports participation and economic success. Many attributed their ability to learn from failure and bounce back from failure solely to participating in sports, as well as to continue moving forward with success onto the next goal. Others attributed their ability to equally divide up the work for a project (as well as the credit for) what they learned from specifically team-oriented sports. A few non-sport participants indicated if they could go back in time they wish they had played on any sort of sports team purely to hone the skills mentioned previously at an earlier age. One participant even added that the cliché phrase "it's not how you win or lose, but how you play the game" is often tossed around in her office as that is the mindset for how her company engages in business operations.

VI. Conclusion

My original hypothesis was that sports participation leads to higher initial earnings for both men and women. The statistic evidence reported here is not compelling on that point. However, this paper has proven that there is some correlation for females participating in youth sports with higher current salaries. Participation in sports during elementary school revealed a surprising negative relationship with salary, and when other individual school years were isolated, their impact was insignificant to current salaries. The reason behind the insignificance of sports participation in isolation is most likely due to multicollinearity. As these variables yield high levels of statistical significance when combined with other terms, it is likely that the individual sports variables are only insignificant due to the linear relationship amongst one another. The model also showed that the highest t-statistics could be seen through including interaction terms combining gender and the sports variables. Although being a female and participation in youth sports entered separately did not create much of an impact on current salaries, when combined, the relationship was a significant contributor towards the current salary.

This indicates that no one variable is the key success driver for a higher salary. It is the combination of many factors, be it being a female and playing sports, or being older with a doctorate degree, etc. that have the most statistically discernible impact on a person's current salary. Parents should not feel compelled to give in to the societal pressure to force children to join organized sports at early ages. If a child wants to play a sport then let them, but this model has illustrated that sports participation is not the sole factor of later economic success, but rather one of many avenues a child, particularly women, can develop the skills crucial for future career paths.

VI. Future Analysis

This model presented new insight into the long-term effects that participation in youth sports is having on all children. The data for this paper was gathered voluntarily through a survey sent to School of Business alumni from The College of New Jersey. For future analysis, a similar structure should be established to examine explore the future economic success rates of females who do or do not participate in sports. However, the data should be collected from a wide variety of sources instead of just one school at one college. The data pool should also be of a much larger size to help better reduce the possibility of multicollinearity. Although much work still needs to be done in this area, this paper was a good introduction into the world of female youth athletes and their long-term gains.

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Table 1

Mean and Standard Deviation of Global Self-Esteem, Team Sports Achievement, Team Sports Self-Evaluations, and Individual Physical Activity Self-Evaluations at Wave 3 and Wave 4

	Wave 3		*Wave 4*					
Study Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*	η^2
Global self-esteem	2.77	0.83	3.12	0.70	6.19	246	***	.14
Team sports achievement	1.13	1.11	1.55	1.10	9.31	246	***	.26
Team sports self-evaluations	3.55	0.90	3.25	0.87	−4.85	246	***	.09
Individual sports self-evaluations	3.94	0.77	3.83	0.65	−2.07	246	*	.02

*$p < .05$. ***$p < .001$.

Pedersen, S. and Seidman, E. (2004)

Table 2

Results of the WHO Study

Source	Country[1]	Sample	Method	Key Findings
Benefice, et al (2001)	Senegal	40 girls (13±0.5)	Accelerometry	Estimated levels of activity high, but clear decline during three years of study. Girls attending school less active than non-attenders.
Bungum & Vincent (1997)[xlvi]	US	852 girls (14-18 years)	7-day recall and survey	Ethnic group (white girls more active) and age (younger more active) significant influences on physical activity. Parental (especially father) support and participation in organised sports associated with activity.
Cale (1996)[xlvii]	UK	103 girls (11-14 years)	Interview Questionnaire	Physical activity levels reported generally low: 45% of sample engaged in no vigorous activity over 4 days; 30% did less than 20 minutes activity a day.
Saxena, et al (2002)[xlviii]	US	305 girls (12-21 years)	Survey	Low levels of activity in majority of girls. Factors associated with regular vigorous activity: friends exercising, involvement in sports team, trying to lose weight, believing in importance of exercise, and being under 17 years of age. Time constraints and laziness most common reasons given for inactivity.

Table 1: Selection of studies examining girls' participation in sports and physical activities

Source	Country	Sample	Method	Findings
Aaron, et al (1993)	US	604 girls & 641 boys (12-16 years)	Questionnaire	Boys considerably more active than girls on all measures, and boys spent more time vigorously exercising and competing in competitive sports than girls.
Australian Bureau of Statistics (2002)[xlix]	Australia	22,325 (5-65+)	Interview	Males had higher participation in every age group, with the difference most evident in the 12-14 &15-19 age groups.
Baranowski, et al (1993)[l]	US	101 girls / 90 boys (3-4 years)	Observation	Boys generally, but not always, more active than girls.
C. Fitness & Lifestyle Research Institute (2004)	Canada	5,303 adults (15 years +)	Telephone interviews	Teenage boys twice as likely as teenage girls to meet international guidance on physical activity.
Guerra, et al (2001)[li]	Portugal	232 girls & 22 boys (8-13 years)	Interview	Physical activity decreased significantly for all groups. Boys reported significantly more activities, except in 8-9 age group.
Lasheras, et al (2001)	Spain	1,358 children (6-15 years)	Reanalysis of survey data	Percentage of active boys higher than that of girls in all age categories.
Raudsepp & Päll (1999)	Estonia	91 girls / 83 boys (7-9 years)	Parental 7-day recall & accelerometry	Significant decrease of activity with age in both sexes. Total physical weekly activity significantly higher in boys than girls in 7- and 8-year groups, but not at 9-years. Boys' mean daily levels of moderate-to-vigorous activity significantly higher than girls in age groups.

[1] 'Country' refers to the setting of the research, rather than that of the author's home institution.

Table 2, cont.

Singapore Sports Council (2001)	Singapore	817 (15-19 years)	Interview	Rate of sports participation higher among males than females. With exception of walking, participation rates for girls lower in all most popular activities.
Telama, et al (2002)[ii]	Belgium, Czech Republic, Estonia, Finland, Germany & Hungary	3270 girls / 3209 boys (12-15 years)	Questionnaire	Boys more active than girls in all countries studied, although variation between countries. Gender difference greatest in organised sports, although participation of girls has increased.
Vilhjalmsson & Kristjansdottir (2003)[iii]	Iceland	1619 girls / 1651 boys	Survey	Girls' lower enrolment in organised sports fully accounts for gender differences in overall physical activity, and largely accounts for differences in frequency of strenuous activity.

Table 2: Selection of studies comparing girls' and boys' participation in sports and physical activities

Word Health Organization (2013)

Table 3

Participation Factors

Personal Factors		**Environmental Factors**	
Biological	*Psychological*	*Social*	*Environmental*
Hereditary	Motivation	Peer group	Access
Age	Perceived barriers	Family	Type of activity
Obesity	Perceived competence	Culture	School
Fitness level	Attitudes	Role models	Independent mobility

Table 3: Factors influencing girls' participation (adapted from Sallis[v])

Word Health Organization (2013)

Table 4

High School Athletics: Education and Labor Market Outcomes

TABLE 3.—THE EFFECT OF ATHLETIC INVOLVEMENT IN HIGH SCHOOL ON EMPLOYMENT* FOR MEN (PROBIT MODEL)

	NLS-72				NLSY			
Independent Variable	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient	(5) Coefficient	(6) Coefficient	(7) Coefficient	(8) Coefficient
Individual active participant in athletics	0.003 (0.06)	0.016 (0.28)	0.007 (0.12)	0.020 (0.35)	0.061 (0.60)	0.087 (0.76)	0.085 (0.73)	0.097 (0.83)
Individual athletic involvement is intensive (most active organization (NLSY) or leader (NLS-72)		−0.047 (0.66)	−0.048 (0.67)	−0.038 (0.53)		−0.068 (0.50)	−0.070 (0.51)	−0.106 (0.75)
Individual is African-American	−0.218 (1.96)	−0.216 (1.94)	−0.170 (1.49)	−0.170 (1.49)	−0.815 (7.36)	−0.819 (7.37)	−0.811 (6.28)	−0.850 (6.41)
Individual is Other	−0.215 (2.40)	−0.214 (2.39)	−0.204 (2.27)	−0.213 (2.36)	−0.107 (0.33)	−0.113 (0.35)	−0.110 (0.34)	−0.102 (0.31)
Individual resided in central city**	−0.041 (0.78)	−0.042 (0.79)	−0.048 (0.91)	−0.032 (0.60)	0.228 (2.15)	0.229 (2.16)	0.228 (2.16)	0.240 (2.24)
Log of age of individual*	−0.065 (0.04)	−0.071 (0.05)	0.339 (0.23)	−0.187 (0.12)	0.828 (0.86)	0.829 (0.86)	0.826 (0.86)	0.978 (1.01)
Log of cognitive ability test			0.271 (2.02)	0.332 (2.40)			0.010 (0.13)	−0.045 (0.51)
Log of high school rank (percentile)				0.015 (0.78)				−0.124 (1.97)
Log of number of years of education completed beyond high school				−0.064 (1.67)				−0.008 (0.10)
Constant	0.947 (0.19)	0.968 (0.19)	−1.498 (0.28)	0.089 (0.02)	−1.646 (0.50)	−1.648 (0.50)	−1.674 (0.50)	−1.690 (0.51)
Number of observations	3014	3014	3014	3014	1047	1047	1047	1047
LR χ^2	9.99	10.43	14.49	18.59	55.75	55.99	56.01	60.39

* 1985 for NLS-72; 1992 for NLSY.
** 1979 for NLS-72; 1992 for NLSY.
Absolute value of z-statistic in parenthesis.
Private high school predicts success perfectly for NLS-72.

Barron, J.M., Ewing, B.T., & Waddell, G.R. (2000)

Table 5

OLS Results for Sports Variables in Female and Male Science Attitudes Models: HSB Sophomore Cohort

Table 4. OLS Results for Sports Variables in Female and Male Science Attitudes Models: HSB Sophomore Cohort

	1980 (Sophomores)		1982 (Seniors)	
Sports Variables	Females	Males	Females	Males
1980				
Activities				
Sports (1 = participant, 0 = not participant)	-.12 (.06)*	.03 (.06)	.04 (.05)	-.02 (.07)
Cheerleading, pep club (1 = participant, 0 = not participant)	-.09 (.06)	.00 (.15)	.01 (.06)	.05 (.17)
Feelings toward athletic students				
Respondent (1 = thinks well of, 0 = doesn't think well of/no difference)	.01 (.08)	-.10 (.07)	-.03 (.07)	-.12 (.08)
Respondent's friends (1 = think well of, 0 = don't think well of/no difference)	-.01 (.08)	.00 (.07)	.01 (.07)	-.02 (.07)
Others see you as athletic (1 = very; 0 = somewhat or not at all)	.02 (.08)	-.03 (.06)	-.12 (.07)	.07 (.06)
1982				
Activities				
Varsity sports (1 = participant, 0 = not participant)			.13 (.06)*	.10 (.06)
Other athletic teams (1 = participant, 0 = not participant)			.11 (.05)*	-.02 (.07)
Cheerleading, pep club (1 = participant, 0 = not participant)			.01 (.06)	-.25 (.11)*
R^2	.22	.27	.35	.36
N	1,603	1,290	1,326	1,092

* Significant at the ≤ .05 level.

Note: Controls for school and individual characteristics are also in the models. They include school type, school program, teacher's interest in students, friends' educational behavior, friends' feelings about students with good grades, self-concept, locus of control, expected age at marriage and first child, popularity and dating, interest in school, grades, standardized math and science scores, time on homework, educational expectations and aspirations, occupational aspirations, and factor scores on science attitude and science access experience. Given the limitations of logistic regression, not all variables are in all models. The full tables are available from the authors.

Hanson, Sandra L., and Rebecca S. Kraus (1998)

Table 6

	Real First Salary	Current Salary
Bachelors	0	0
Masters	+	+
Doctorate	+	+
Science/Math/Technology degree	0	0
Public/Social Services Degree	0	0
Business/Finance/Accounting degree	0	0
Grade Point Average	+	+
Played Youth Sports	+	+
Played Pre-School Sports	+	+
Played Elementary School Sports	+	+
Played Middle School Sports	0	0
Years on Sports Teams	+	+
Management Occupation	0	0
Finance Occupation	+	+
Computer/Math Occupation	+	+
Legal Occupation	+	+
Sales Occupation	0	0

+ = Positive relationship
- = Negative relationship
0 = No significant relationship

Table 7

Regression Estimate, First Real Salary

Number of obs	321
F(21, 299)	1.73
Prob > F	0.026
R-squared	0.1083
Adj R-squared	0.0456

realfirstsal	**Coef.**	**t**	**P>t**
bachelors	3944.72	0.22	0.823
masters	2388.334	0.13	0.893
doctorate	19159.04	0.94	0.35
female	-377.3036	-0.19	0.851
scimathtech	3640.642	0.46	0.644
pubsocserv	16846.78	1.83	0.069
mgtmrkt	-1804.137	-0.31	0.754
busfinacct	1151.447	0.2	0.838
gpa	1145.685	0.49	0.622
playedsports	8350.75	2.19+	0.029
preksports	6406.519	2.36+	0.019
k5sports	-3192.533	-1.25	0.213
middlesports	-1250.795	-0.47	0.64
hssports	5553.108	1.96	0.051
yearsonspo~s	-825.7466	-1.93	0.055
teamsperyear	861.4313	0.66	0.511
mngtocc	4969.342	1.31	0.19
financeocc	5202.403	1.72	0.086
compmathocc	7295.316	1.12	0.262
legalocc	-11732.01	-1.06	0.29
salesocc	8962.091	2.23+	0.027
_cons	33764.86	1.72	0.086

*1% significance level, + 5% significance level

Table 8

Regression Estimate, Current Salary

				Number of obs	321
				F(22, 298)	8.84
				R-squared	0.3949
				Adj R-squared	0.3503
currentsal	Coef.	t	P>t		
yearsinceg~d	954.3446	8.27	0		
bachelors	86688.85	4.34	0		
masters	95327.81	4.72	0		
doctorate	79963.16	3.47*	0.001		
female	6431.765	2.78*	0.006		
scimathtech	12638.21	1.43	0.154		
pubsocserv	17334.99	1.67	0.096		
mgtmrkt	6939.905	1.07	0.284		
busfinacct	10465.18	1.66	0.098		
gpa	6362.678	2.45+	0.015		
playedsports	-672.2993	-0.16	0.875		
preksports	-2541.372	-0.83	0.407		
k5sports	-4878.707	-1.67	0.096		
middlesports	5653.743	1.88	0.061		
hssports	1355.551	0.43	0.67		
yearsonspo~s	314.0371	0.65	0.513		
teamsperyear	266.3402	0.18	0.858		
mngtocc	18129.16	4.27	0		
financeocc	14217.82	4.17	0		
compmathocc	23738.37	3.26*	0.001		
legalocc	20911.04	1.68	0.094		
salesocc	17886.88	3.96	0		
_cons	-66608.37	-2.94*	0.004		

*1% significance level, + 5% significance level

Table 9

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of realfirstsal

chi2(1) = 4.29
Prob > chi2 = 0.0383

Table 10

Regression Estimate Corrected for Heteroskedasticity, First Salary

Linear regression				Number of obs	321
				R-squared	0.1114
lnfirstsal~y	Coef.	t	P>t		
bachelors	-0.0051637	-0.03	0.974		
masters	-0.0503669	-0.32	0.751		
doctorate	0.2899608	0.95	0.344		
female	0.0056735	0.13	0.896		
scimathtech	0.1028735	0.8	0.427		
pubsocserv	0.3872993	1.82	0.069		
mgtmrkt	-0.0516541	-0.64	0.521		
busfinacct	-0.0165312	-0.19	0.848		
gpa	0.0228772	0.48	0.629		
playedsports	0.1779794	2.15+	0.032		
preksports	0.1435282	2.95*	0.003		
k5sports	-0.0463401	-0.71	0.478		
middlesports	-0.0381425	-0.63	0.532		
hssports	0.1225668	1.93	0.054		
yearsonspo~s	-0.0166979	-2.03+	0.043		
teamsperyear	0.0161011	0.63	0.529		
mngtocc	0.130994	1.54	0.124		
financeocc	0.1601985	2.03+	0.043		
compmathocc	0.1599496	1	0.316		
legalocc	-0.2992587	-1.05	0.294		
salesocc	0.189325	1.85	0.065		
_cons	10.48941	48.42	0		

*1% significance level, + 5% significance level

Table 11

Regression Estimate Corrected for Heteroskedasticity, First Salary

Linear regression				Number of obs	321
				F(22, 298)	2.69
				R-squared	0.1114
lnfirstsal~y	Coef.	t	P>t		
bachelors	-0.0696156	-0.46	0.647		
masters	-0.0975702	-0.65	0.519		
doctorate	0.2703783	0.88	0.378		
female	0.0256698	0.59	0.557		
scimathtech	0.0978364	0.77	0.440		
pubsocserv	0.3579403	1.64	0.102		
mgtmrkt	-0.0651262	-0.83	0.409		
busfinacct	-0.0210094	-0.25	0.805		
gpa	0.0246207	0.53	0.594		
playedsports	0.1606105	1.97+	0.050		
preksports	0.1284759	2.65*	0.008		
k5sports	-0.0649332	-1.02	0.307		
middlesports	-0.0301295	-0.50	0.614		
hssports	0.1250123	1.99+	0.048		
yearsonspo~s	-0.0155221	-1.88	0.061		
teamsperyear	0.0057395	0.22	0.823		
mngtocc	0.1550964	1.78	0.076		
financeocc	0.1552037	1.93	0.055		
compmathocc	0.1488495	1.00	0.317		
legalocc	-0.3362432	-1.16	0.248		
salesocc	0.1887831	1.81	0.071		
_cons	4.17659	1.51	0.133		

*1% significance level, + 5% significance level

Table 12

Regression Estimate Corrected for Heteroskedasticity, Current Salary

Number of obs	321
F (22, 298)	8.29
R-squared	0.3798
Adj R-squared	0.334

lncurrentsal	Coef.	t	P>t
yearsinceg~d	0.0123155	7.61	0.000
bachelors	1.329183	4.74	0.000
masters	1.438121	5.07	0.000
doctorate	1.27303	3.94	0.000
female	.089164	2.75*	0.006
scimathtech	.2011313	1.62+	0.106
pubsocserv	.2853131	1.96	0.051
mgtmrkt	.1116259	1.23	0.220
busfinacct	.1613418	1.82	0.069
gpa	.0901914	2.47+	0.014
playedsports	-.0093872	-0.16	0.876
preksports	-.0289976	-0.68	0.500
k5sports	-.0772573	-1.89	0.060
middlesports	.071695	1.70	0.090
hssports	.010272	0.23	0.818
yearsonsports	.0056175	0.83	0.405
teamsperyear	.0027639	0.13	0.895
mngtocc	.2597251	4.36	0.000
financeocc	.2137181	3.37	0.000
compmathocc	.3344541	3.27*	0.001
legalocc	.2107285	1.21	0.228
salesocc	.2556432	4.03	0.000
_cons	9.061603	28.47	0.000

*1% significance level, + 5% significance level

Table 13

Regression Estimate Corrected for Heteroskedasticity, Current Salary

				Number of obs	321
				R-squared	0.1989
lncurrentsal	Coef.	t	P>t		
bachelors	1.066443	12.61	0.000		
masters	1.184724	12.09	0.000		
doctorate	1.187702	3.72	0.000		
scimathtech	.1708694	0.99	0.325		
pubsocserv	.2489601	0.76	0.448		
mgtmrkt	.0771686	0.58	0.563		
busfinacct	.1550249	1.18	0.239		
gpa	.0658145	1.50	0.135		
playedsports	.0294928	0.44	0.661		
preksports	-.0499451	-1.02	0.309		
k5sports	-.1145716	-2.85*	0.005		
yearsonsports	.0098989	1.63	0.105		
mngtocc	.3160505	4.11	0.000		
financeocc	.181537	2.54*	0.012		
compmathocc	.330238	3.47*	0.001		
legalocc	.002345	0.01	0.995		
salesocc	.2455035	2.82*	0.005		
_cons	0.665039	44.65	0.000		

*1% significance level, + 5% significance level

Table 14

Regression Estimate with Interaction Terms, Current Salary

Linear regression				Number of	321
				R-squared	0.1665
lncurrents~y	Coef.	t	P>t		
WomenNoSpo~s	-0.2579555	-2.01+	0.045		
female	0.1859634	4.77	0		
nosports	0.1201085	1.43	0.153		
bachelors	0.9759604	28.59	0		
masters	1.122529	28.26	0		
doctorate	1.002105	9.63	0		
playedsports	0.056182	0.78	0.433		
preksports	-0.0563861	-1.23	0.22		
k5sports	-0.0915772	-2.41+	0.016		
_cons	10.22097	130.11	0		

*1% significance level, + 5% significance level

Table 15

Regression Estimate with Interaction Terms, Current Salary

Linear regression				Number of	321
				R-squared	0.3066
lncurrents~y	Coef.	t	P>t		
FemaleDr	0.2545704	1.14	0.256		
WomenSports	0.197103	2.07+	0.039		
female	-0.0517639	-0.61	0.54		
bachelors	1.145732	15.84	0		
masters	1.260594	15.26	0		
doctorate	0.9967273	4.98	0		
yearsinceg~d	0.0108005	5.47	0		
gpa	0.072222	1.93	0.055		
playedsports	-0.0954859	-1.04	0.297		
nosports	0.0228853	0.27	0.789		
hssports	0.0385126	0.98	0.33		
middlesports	0.0968945	2.08+	0.038		
k5sports	-0.0888826	-2.11+	0.036		
preksports	-0.0264616	-0.65	0.519		
teamsperyear	-0.0007384	-0.04	0.969		
_cons	9.742052	57.82	0		

*1% significance level, + 5% significance level

Table 16

Results for Open-Ended Assessments

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Teamwork	0.00	10.00	7.59	2.31	316
2	Confidence	0.00	10.00	7.07	2.29	308
3	Hard work	0.00	10.00	7.48	2.22	306
4	Discipline	0.00	10.00	7.23	2.34	311
5	Leadership	0.00	10.00	7.01	2.38	300
6	Time Management	0.00	10.00	6.48	2.74	305
7	Determination	0.00	10.00	7.16	2.46	309
8	Goal setting	0.00	10.00	6.51	2.47	299

Table 17

Respondents viewing attributes learned from participation in some organized sport directly correlates with success later in life

#	Answer		Response	%
1	Yes		270	77%
2	No		80	23%
	Total		350	100%