High School Athletic Engagement and Job Characteristics in Adulthood

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Introduction

It is an American societal belief that athletes are more successful than non-athletes socioeconomically. Earlier studies suggested that high school athletes tended to do better academically in high schools and in the general educational attainment as a whole. However, the relationships between athletic engagement in high school and labor market performance were inconsistent. Many contributed the athletic socioeconomic advantage to unobserved "non-cognitive" skills or qualities. We here examined the long-term influences of participating in sports activities in high school on characteristics of the jobs and occupations at ages 35, 55, and 65 (or pre-retirement) using a large group of male high school graduates of class 1957 in Wisconsin Longitudinal Study (WLS). An array of explanatory and control variables, including IQ, ambition, socioeconomic origin, childhood health, and adulthood socioeconomic status, allowed us to have better understandings on the associations between high school sports participation and labor market outcomes.

Literature Review

For several decades, academic and labor market successes of college or high school athletes have fascinated social scientists. The studied outcomes included achievement aspirations, expectations and plans, study habits, academic performance, educational attainment, occupational status, and income. The explanations were more unified than the studied outcomes though: the athletes possessed unique qualities that enable them to succeed in labor market.

Coleman and his colleagues first brought in the discussions between pro-athletic environment in American high schools and adolescent academic achievement (Coleman 1959, 1960 and 1961; Coleman and McDonald 1965;). Coleman found that the prestige system among high school students placed athletes ahead of any other "types" of students. Athletes were more

likely to be nominated as members of the leading crowd and admired by the other students. The athletic achievement was rated more important that social popularity and academic achievement among high school students. Though scholastic pursuit should have been the focus of school life, the interests of the community and the school per se had influenced the value system of students and thus led most students' efforts toward tangential directions, such as sports, and thus to ignore studying. Coleman suggested that though participating in school extra-curricular activities provided alternative paths to peer's acceptance, that acceptance might also divert energies away from academics. In his writing, Coleman argued that students' efforts were finite. They could consist various components but the sum of all efforts was the same. With the strong emphasis on sports, the academic performance in general would likely suffer (Coleman 1961)

Findings from subsequent studies, however, disagreed with implicit speculations from Coleman's works on limited time and academic performance. High school athletic students did not perform worse than other students academically. On the contrary, athletic students tended to have better academic performance. Athletes were more likely to have higher grades, to graduate from high school, to go to college, and to graduate from college (Schafer and Rehberg, 1970; Spady 1970, 1971; Snyder and Spreitzer XXXX; Otto and Alwin 1977; Hauser and Lueptow 1978; Braddock 1981; Marsh 1993; Lipscomb 2007; Pfeifera and Cornelißen 2010). The athletes tended to have higher educational aspiration than the non-athletes (e.g., Rehberg and Schafer 1968; Schafer and Rehberg 1970; Spady 1970, 1971; Otto and Alwin 1977). Some studies even suggested that the athletes tended to come from families of better socioeconomic economic origin than the non-athletes (Hyman and Wright 1971; Fejgin 1998) though other did not (Schaefer and Armer 1968; Rehberg and Schafer 1968; Marsh and Kleitman 2003). In summary, sports participation in high school was positively associated with high school grades,

the chance to graduate from high school, college attendance, and college degree. It was also related to parental involvement and encouragement, student's educational and occupational aspiration. Those psychological and personality factors, especially educational and occupational ambitions were the most robust predictor for athletic educational success.

Labor market usually values a set of personal qualities similar to those required for academic success. In other words, the qualities which allegedly gave athletes the advantage on educational attainment would also give them the advantages in labor market and in the process of socioeconomic [SSCC1]attainment. The findings on labor market outcomes were less robust as those on eudcaiton. In a follow up study of 400 seventeen-years-old students from Lenawee county, Michigan, Otto and Alwin (1977) found that being an athlete at age 17 was positively associated with concurrent achievement aspirations, and subsequent educational attainment, occupational status and income at age 32. Howell and his colleague (1984), however, found that being an athlete did not enjoy economic payoff (e.g., annual earning, hourly wage and monthly earning) one yea and five years after high school for youth in five waves of Youth in Transition study. Both studies controlled for occupational status and achievement aspiration. Using Senior Cohort of High school and beyond Study, Sabo, Melnick and van Fossen (1993) found no effect of high school sport participation on post-secondary occupational attainment and subsequent occupational aspiration.

Despite of the negative findings from Howell et al. (1984) and Sabo et al (1993), other studies supported athletes' economic advantage, i.e., income and wage, enjoyed by athletes. Combining data of NLSY and NLS 72, Barron, Ewing and Waddell (2000) found some evidence that sports participation influenced weekly wage around age 30 and education beyond high school. Recently Lleras (2008) found that athletic participation at 10^{th} grade was positively

associated with educational and income attainment at age 26-27, using data from National Educational Longitudinal Study (NELS). Non-cognitive work habits, social skills, and cognitive ability at 10^{th} grade were controlled in the study.

One might argue that becoming an athlete was self-selected. Studies controlling for endogeneity showed the evidence on labor market advantage might not be as robust as suggested in earlier literature. Eide and Ronan (2001), using 1980 Sophomore cohort of High School and Beyond study (HSB), employed height as an instrumental variable to estimate the effect of varsity sports participation on socioeconomic status. Surprisingly, they found that sports participation had a negative effect on the educational attainment of white athletes, a positive effect on education and earning of black athletes, and no effect on other attainment and other athletes. Anderson (2001) also used instrumental variable method and found that the athletic advantage was only seen for educational attainment of white students in HSB and NELS.

How does the athlete status help for socioeconomic attainment? Conventional wisdoms suggested that sports participation builds characters, improves self-discipline and esteem, and promote the value of team works (Spreitzer 1994). The most consistent finding has been on socioeconomic ambition. The athletes had higher socioeconomic ambitions than the non-athletes did (Coleman 1961; Rehberg and Schaefer 1968; Spady 1970, 1971; Spreitzer and Pugh 1973). It is well-known that ambition explained the socioeconomic attainment (Hauser, Tsai, and Sewell 1983). According to Otto and Alwin (1977) the ambitions help in educational attainment as well as occupational and income attainment. About 34% of the positive effect of sports participation on education was explained by educational and occupational aspiration, 44% was by the combination of significant others and perceived peer status, and 22% was direct. While one's own aspiration and significant others' encouragement mediated the relationship between athletic

participation and later socioeconomic status, the perceived peer status in high school was not statistically significant in Otto and Alwin (1977). Howell et al (1984) found no effect of sports participation, after controlling for occupational and educational ambition. Achievement aspiration and ambition were ignored in recent studies, in which some advanced methods were used to take care of selection issue. Along the line of social psychological explanation, many studies analyzed differences between athletes and non-athletes in personal characteristics, for example, better time management (Leeds, Miller, & Stull 2007; Swanson 2002), better class attendance, and less deviant behaviors (XXXXX). They might provide indirect evidence that the athletes were more conscientious than the non-athletes, but findings were less consistent.

The socioeconomic success of athletic participation is important both empirically and theoretically. Academic and socioeconomic success has been explained mainly by socioeconomic background and individual merits, such as hard working, ambitions, and intelligence. Here, social psychological traits were labeled as "soft skills" while qualifications, credentials, and cognitive abilities were labeled as "hard skills". Bowles and Gintis (1976, 2003), however, hypothesized the educational system produced men and women who were in confirmation with the values of the society. They argued that the non-academic traits mattered more than the hard skills as the determinants of labor market success. The argument indeed suggests a plausible explanation for the athletic socioeconomic advantages, given that athletes enjoy a superior status in schools, communities, and society. That is, playing sports helps children to acquire certain non-academic 'skills' or merits which are valued in this society and subsequently give them the socioeconomic edge. A closer comparison on the process of socioeconomic attainment between athlete and non-athlete students is thus important for the

understanding how social stratification process, alternatively, how the labor market rewards its participants, works.

What are the traits distinguishing athletes from non-athletes? Social, psychological explanations are the most popular, but physical differences between athletes and others are the most evident. For example, height has been recently used as an instrument variable to study socioeconomic status and sports participation. Analyzing youth from older birth cohorts (NELS and HSB), Eide and Ronan (2001) and Anderson (2001) showed no effect or some negative effect of sport participation on earnings, though educational advantage remained. Rees and Sabia (2010) further found that the effects of athletic participation on academic performance (GPA, college aspiration, attention in class and completing homework) were limited among adolescents in National Longitudinal Study of Adolescent Health. The obvious criticism is that height is associated with economic return in earlier economic literature (XXXX). Nevertheless, the findings suggest that statue matters. Persico, Postlewait and Silverman (2004), after showing the positive relationship between height and labor market success, argued that sports participation in high schools mediated the wage premium of athletes. In short, the positive relationship between athletic participation and physical strength (height) might underscore the relationship between socioeconomic status and athletic participation.

The most obvious trait, but often-ignored in athletic studies, is childhood health. Height was associated with health status (Rees et al., 2009). Athletic students might not be all taller than non-athletic ones, but they are physically fitter in general. Evidence on physical health and academic achievement is plenty. For example, obesity dampened academic performance and cognitive ability among children of all ages (Gunstad et al 2010; Han and Palloni 2011). There was also a long-term link between childhood health and labor market success, including

education and income (Case and Paxon 2000; Palloni, Melesi and White 2009). So the socioeconomic advantages of athletes may indicate their advantages in health.

Another possible explanation is from statistical discrimination perspective. Works by Coleman and his colleagues, and Gentic and Bowles laid foundation for the argument. Athletic engagement is an important societal value. That is, the employers preferred to hire athletes given equal qualifications between two job candidates.

Research Questions

Our early study showed mixed findings (Kuo, Han and Palloni 2011). We found that athletic engagement explained the college entrance, but not college graduation and advanced degrees. Athletes did not have occupations of higher status in terms of education and incomes. They did not have higher income in various stage of life, but they had more asset at age 65 than non-athletes.

The mechanisms to explain the athletic labor marketpaa advantages need further exploration and elaboration for both empirical and theoretical reasons. Due to data limitation, first, individual characteristics alleged to benefit both education and labor market outcomes were either unmeasured in most studies or requiring long-term observations. If socioeconomic ambition or some unobserved personal traits were to explain athletic educational advantages, they may also explain post-educational labor market success. For example, achievement ambition was unmeasured in studies of athletic post-educational attainments except in Otto and Alwin (1977). Higher achievement ambition explains socioeconomic success only partially from early status attainment model (Hauser, Tsai and Sewell 1983). While "soft" skills may have made athletes succeed socioeconomically, cognitive ability, the quintessential hard skill, was rarely included in existing studies due to data limitation. Last, but not least, though being a high

school athlete indicates a superior physical condition, the relationships between childhood health and athletic socioeconomic success have been seldom explored. Exploring both psychological and physical traits in explaining athletic socioeconomic advantage over the life course, that is, the process of socioeconomic attainment, increases our understandings on the mechanisms that how the socioeconomic resources were rewarded and distributed to members of the society.

In this study, we examined whether and to what extent being an athletic in high school had advantages on various characteristics of the first job, job at age 55, and job at age 65 or of pre-retirement. We were interested in whether athletes and non-athletes have different types of jobs and occupations, with controlling for their occupational status and education; and how early factors such as labor market ambition, academic ability, high school grades, and childhood health explained the variations.

Methods

Data and Variables

We used the Wisconsin Longitudinal Study (WLS). The WLS is a prospective life course study of 1/3 of all Wisconsin high school seniors in 1957. In 1957, the study collected information on residence, parental socioeconomic status, educational expectation, aspirations, family income, high school performance, intelligence, and curriculum from all high school seniors, their teachers and schools. In 1975, the study randomly selected and followed one third of the original sample, and collected data on their schooling, work, marriage, fertility, social activities, and more early life circumstances. In 1993, besides updating schooling, education, marriage, fertility, social activities, and work/jobs, the graduates were asked about physical and mental health, family life, financial inter-transfers, caregiving and receiving, and their relationships with spouses, parents, children, and selected siblings. In 2004, graduate

respondents of 1975 or 1993 were re-interviewed again. In addition to the socioeconomic and demographic data, the WLS expanded data collection on physical and mental health, cognitive ability and early family circumstances. Some background information on respondents' early life were obtained by linking and recoding administrative data and public records, for example, family income from social security and tax record in 1975, socioeconomic characteristics of neighborhood in high school, characteristics of elementary, junior and senior high schools, and colleges from state data and public records, and extracurricular activities from high school yearbook. The WLS was ideal for our inquires because the study contained quality information on socioeconomic background, high school grades, occupational aspiration, cognitive ability at high school, and a complete educational and occupational history. Moreover, the new variables now available in WLS can assist us to understand better on the missing links in the original status attainment model (for example, Hauser, Tsai, and Sewell 1983), literally, the relationships between socioeconomic status and individual non-academic characteristics/experiences in high school such as athletic activities.

We reported the descriptive statistics of our variables in table 1. Our dependent variables include indicators of public sector, self-employment, managers officials and proprietors occupations, professional/technical and kindred occupations, construction/manufacture industry, finance/business industry, public administration/professional and related services industries, the offer of health insurance and pension plan, how dirty the job would be, hours spent on writing and reading, hours spent on people, and whether the respondents have the authority to fire or to decide the pay. Our independent variables include IQ, occupational aspiration, high school academic performance, and children health. We also control for educational attainment (years of schooling) and occupational status.

The yearbooks of 1957 class provided information on sports participation. In a project of rating attractiveness from high school yearbook pictures, the WLS researchers scanned all pages of the yearbooks and recorded all code-able extracurricular activities. The total number of activities for each graduate respondent ranged from zero to twenty-seven. There were more than 90 different activities for all schools and respondents. The football, basketball and track were the most popular sports among male respondents; the female respondents mostly, if participating in any sports, were in Girls Athlete Association (G.A.A.). In our analysis, we limited our analysis to ***male athletes*** because of the small proportion of female athletes and the lack of variations in the type of sports before Title IX (1972). We further restricted our analysis to male respondents who were interviewed in 1975, i.e., the first formal follow up interview, and in 2004, the most recent follow-up interview. Two types of sports participation were studied: participating in any type of sports (including varsity and club) and in varsity sports.

Cognitive ability, occupational aspiration and childhood health were our key explanatory and intermediate variables. The normalized score of Hemon-Nelson ability test was the indicator of cognitive ability. During 1950s, Wisconsin department of public instruction administered the test to all high school students at their junior and/or senior years. The WLS obtained the test scores for the class of 1957 from the school record and normalized them into percentile. The grades of the respondents were obtained from the schools in 1957. The graduate respondents reported their occupational aspirations in high school retrospectively in 1975. In 2004, the WLS asked a series of questions related to the respondent's health in childhood, including self-rated health status, a list of childhood diseases, and school absence/bed confinement/physical restriction due to illness. We mainly used the general health status in childhood, which ranged from 1 (very poor) to 5 (excellent).

Who the athletes were

Appendix A reported the multivariate regression findings on the associations between family background and sports participation. The positive associations between sports participation on the one hand and parental education, health status in childhood, and occupational aspiration on the other hand were significant. Boys of better-educated parents, better health, and higher occupational aspiration were more likely to participate in any sports or any varsity sports. For the athletes, the associations between numbers of sports and varsity sport and parental socioeconomic status were barely significant. Better physical health in childhood and higher occupational aspiration in high school were associated with the likelihood of sports participation for boys, and with numbers of sports for athletes. Male students of better grades were more likely to be in varsity teams; and varsity athletes of better grades tend to play more varsity sports. In general, children of better socioeconomic parents and of better health were more likely to play any (varsity) sports and athletes of better socioeconomic parents tended to play more sports.

In Appendix B. we further showed the partial correlations between early health, IQ, occupational aspiration and high school grades, controlling for family background variables. Occupational aspiration was significantly related to all other individual determinants of socioeconomic success while early health was only associated with aspiration. The significant associations between those non-sports determinants and their associations with sports participation suggested that the mediating relationships among these early individual determinants were not as straightforward as athletic academic advantage. Moreover, early health was an important, though often-ignored, factor.

Findings

Tables 2-3 were the preliminary findings.

Discussion

Table 1 Selected Descriptive Statistics					
Variable	Obs	Mean	Std. Dev.	Min	Max
Class of Work for Current Job					
Public Sect	4527	0.13	0.33	0	1
Self emplyr	4527	0.04	0.19	0	1
Public Sect	3975	0.18	0.39	0	1
Self emplyr	3975	0.19	0.39	0	1
Public Sect	3562	0.17	0.40	0	1
Self emplyr	3562	0.23	0.44	0	1
1992/3 and 2004 Job Categories					
Prof Job 92	3980	0.18	0.44	0	1
Manager jc	3980	0.22	0.47	0	1
Prof Job 04	3370	0.10	0.57	0	1
Manager jc	3370	0.14	0.59	0	1
1992/3 job characteristics					
Health Insu	3980	0.80	0.46	0	1
Pension 92	3980	0.69	0.51	0	1
Hours on w	3923	19.67	14.58	0	96
Hours on p	3891	22.67	16.19	0	96
How dirty	3934	3.18	0.90	1	4
auth_fire	1921	0.40	0.49	0	1
auth_pay	1920	0.43	0.50	0	1
Childhood conditions					
iq57	4991	1.01	0.15	0.61	1.45
hsrank57	4638	96.93	14.65	61	139
hsap57	4636	48.21	27.36	2	96
healht chil	3145	4.27	0.96	1	5
Yrs of Shco	4569	13.80	2.43	12	20
Numbers of (varsrity) sports					
ttlsport	4991	1.26	1.47	0	8
ttlvars	4991	0.98	1.28	0	7

Table 2 Varsity Athletes and Occupational Characteristics from First Job to Retirement, WLS Male Respondents

	First Job							Age 55							Age 65 (current/last or preretirement job)						
Dependent	Eq 1	Eq 2	Eq 3	Eq 4	Eq 5	Eq 6	Eq 7	Eq 1	Eq 2	Eq 3	Eq 4	Eq 5	Eq 6	Eq 7	Eq 1	Eq 2	Eq 3	Eq 4	Eq 5	Eq 6	Eq 7
COW																					
Self	-0.171	-0.167	-0.153	-0.136	-0.300	-0.312	-0.443*	0.084	0.080	0.098	0.129	0.018	0.012	0.012	0.234***	0.229***	0.256***	0.266***	0.273***	0.254**	0.275**
Employe	(0.173)	(0.173)	(0.175)	(0.181)	(0.226)	(0.224)	(0.228)	(0.089)	(0.089)	(0.092)	(0.095)	(0.113)	(0.113)	(0.113)	(0.088)	(0.088)	(0.092)	(0.095)	(0.104)	(0.104)	(0.109)
Govern	0.208**	0.189*	0.156	0.114	0.023	-0.151	-0.110	0.249***	0.241***	0.239**	0.185*	0.229**	0.156	0.174	0.140	0.138	0.152	0.128	0.141	0.098	0.103
ment	(0.099)	(0.100)	(0.105)	(0.108)	(0.129)	(0.143)	(0.147)	(0.091)	(0.091)	(0.096)	(0.098)	(0.111)	(0.115)	(0.116)	(0.097)	(0.097)	(0.101)	(0.103)	(0.109)	(0.110)	(0.127)
Occupational Category																					
Professi	0.085	0.047	-0.020	-0.021	0.006	-0.255*	-0.225	-0.030	-0.060	-0.157*	-0.228**	-0.268**	-0.401***	-0.401***	-0.091	-0.120	-0.168*	-0.189*	-0.163	-0.261**	-0.261**
onal	(0.065)	(0.068)	(0.073)	(0.075)	(0.104)	(0.130)	(0.169)	(0.086)	(0.088)	(0.093)	(0.097)	(0.111)	(0.118)	(0.118)	(0.091)	(0.093)	(0.098)	(0.101)	(0.109)	(0.113)	(0.113)
Manage	-0.012	-0.021	-0.044	-0.036	0.134	0.072	0.130	0.414***	0.406***	0.369***	0.359***	0.420***	0.402***	0.471***	0.321***	0.310***	0.289***	0.329***	0.289***	0.281***	0.367***
r	(0.079)	(0.079)	(0.081)	(0.084)	(0.133)	(0.135)	(0.155)	(0.082)	(0.084)	(0.087)	(0.090)	(0.105)	(0.105)	(0.116)	(0.088)	(0.089)	(0.093)	(0.096)	(0.103)	(0.103)	(0.121)
Industry																					
Pub/Prof	0.066	0.041	-0.004	-0.014	0.030	-0.191	-0.094	0.200**	0.185**	0.130	0.084	0.180*	0.071	0.114	0.099	0.083	0.032	0.025	0.088	-0.002	0.043
	(0.069)	(0.070)	(0.073)	(0.076)	(0.105)	(0.128)	(0.141)	(0.083)	(0.084)	(0.088)	(0.091)	(0.105)	(0.115)	(0.119)	(0.084)	(0.085)	(0.088)	(0.091)	(0.098)	(0.103)	(0.117)
Finance	-0.176***	-0.172***	-0.152**	-0.135*	-0.081	-0.083	-0.029	-0.038	-0.044	-0.050	-0.025	-0.036	-0.009	-0.010	-0.015	-0.016	-0.006	0.026	0.030	0.047	0.075
or	(0.066)	(0.066)	(0.069)	(0.071)	(0.095)	(0.095)	(0.099)	(0.083)	(0.083)	(0.086)	(0.090)	(0.105)	(0.106)	(0.111)	(0.080)	(0.080)	(0.083)	(0.086)	(0.093)	(0.093)	(0.105)
Constru	0.083	0.092	0.097	0.124*	0.190**	0.243***	0.190**	-0.080	-0.063	-0.027	-0.008	0.032	0.087	0.122	-0.167**	-0.152**	-0.127	-0.098	-0.129	-0.081	-0.021
ction/Ma	(0.062)	(0.062)	(0.065)	(0.067)	(0.085)	(0.087)	(0.091)	(0.071)	(0.072)	(0.075)	(0.077)	(0.089)	(0.092)	(0.100)	(0.076)	(0.077)	(0.080)	(0.083)	(0.088)	(0.090)	(0.104)

Table 3. Varsity Atheletes and Job Characteritics at Age 55, WLS male respondents							
	Eq 1	Eq 2	Eq 3	Eq 4	Eq 5	Eq 6	Eq 7
with pension	0.108	0.106	0.102	0.077	0.153	0.124	0.133
	(0.077)	(0.077)	(0.080)	(0.084)	(0.098)	(0.099)	(0.100)
with health insu	0.098	0.097	0.066	0.025	0.068	0.052	0.053
	(0.090)	(0.090)	(0.095)	(0.099)	(0.116)	(0.116)	(0.117)
auth_pay	0.342***	0.333***	0.303***	0.314***	0.182	0.157	0.163
	(0.102)	(0.104)	(0.108)	(0.111)	(0.130)	(0.130)	(0.133)
auth_fire	0.255**	0.244**	0.209*	0.205*	0.085	0.074	0.077
	(0.103)	(0.104)	(0.108)	(0.111)	(0.129)	(0.130)	(0.133)
hrs_writing	1.229**	1.137**	0.649	0.504	0.185	-0.040	0.100
(OLS reg)	(0.508)	(0.505)	(0.518)	(0.532)	(0.607)	(0.602)	(0.566)
hrs_people	1.252**	1.269**	0.924	0.826	1.081	0.982	1.030
(OLS reg)	(0.569)	(0.569)	(0.587)	(0.609)	(0.694)	(0.695)	(0.684)
how dirty	0.104***	0.090***	0.056*	0.046	0.001	-0.017	-0.007
(OLS reg)	(0.031)	(0.030)	(0.029)	(0.030)	(0.035)	(0.034)	(0.031)