Sports Career as an Investment: Evidence From the Finnish Athletes

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Emma Laaksonen

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Author Emma Laaksonen	
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Abstract

Discussion regarding sports and athletes is somewhat contradictory. On one hand, professional athlete is thought of as a profession that brings high financial returns for an individual. On the other hand, it seems that there is a severe lack of money for many Finnish elite athletes. As each individual is different, so is each sports career. Yet, there are certain similarities that apply for most cases. The purpose of this study is to find whether or not investing in a sports career is financially profitable for an individual and where the possible profits come from. The biggest advantages, joy and enjoyment of participating, from sports are not taken into account in this study. There are two ways to profit from one's sports career. The first way is to become good enough to receive salary, bonuses or prize money during the sports career itself. The other possibility is to use the skills learned and contacts made during sports career later in life to earn money.

The background information and theory for this study comes from earlier research on the topic done both in North America and Finland. As for the information on the life and working career after sports, a survey was conducted for former Finnish top athletes in ice-hockey, track and field and swimming.

The results of this study show that even though the very best athletes earn noticeable amounts of money, the probability of becoming such a high-earner is so low that the NPV from the actual sports career is negative when taking into account probabilities of different scenarios and the forgone income caused by training. Yet, investing in sports career seems to be also an investment in human and social capital. Former athletes have mostly placed well in the workforce and 78% of these former athletes see their career as helpful in their later life in the workforce. Similarly to the studies conducted in North America, former athletes, on average, earn higher than average wages also in Finland. It seems that while an individual athlete does personal choices that may be financially negative during the actual sports career, the increased human and social capital bring such advantages later in life that the combined financial returns turn positive.

Keywords Sports, Athlete, Human Capital

Tekijä Emma Laaksonen

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Tiivistelmä

Huippu-urheilu on paljon tunteita herättävä aihe. Keskustelu aiheen ympärillä on usein ristiriitaista. Yhtäältä yksittäisten huippu-urheilijoiden suuret palkat ja palkintorahat synnyttävät mielikuvan, että urheilijan ammatti on helppo tapa ansaita miljoonia. Toisaalta, esillä on monen suomalaishuipun merkittävä puute rahoituksesta. Kuten jokainen yksilö, myös jokainen urheilu-ura on omanlaisensa. Tietyt samankaltaisuudet kuitenkin yhdistävät suurinta osaa kilpaurheilu-urista. Tämän tutkimuksen tavoitteena on selvittää, onko urheilu-ura yksilölle taloudellisesti kannattava valinta ja mistä mahdolliset tuotot tulevat. Urheilemisen suurimpiin etuihin, urheilemisen ja kilpailemisen iloon, ei oteta tutkimuksessa kantaa eikä niitä lasketa taloudelliseksi hyödykkeiksi. Tässä tutkimuksessa laskettavaa taloudellista etua urheilu-urasta voi saavuttaa kahdella tavalla. Ensimmäinen keino on saavuttaa itse urheilu-uran aika asema, jossa voi saada palkkaa, bonuksia tai palkintorahoja. Toinen mahdollisuus on käyttää uran aikana urheilun kautta opittuja taitoja ja luotuja kontakteja myöhemmässä elämässä niin, että taloudellista hyötyä syntyy esimerkiksi keskiarvoa nopeamman urakehityksen tai suuremman palkan muodossa.

Tämän tutkimuksen taustatiedot sekä teoriaosuus perustuvat aikaisempaan kirjallisuuteen ja tutkimuksiin sekä Suomesta että Pohjois-Amerikasta. Osuus, jossa tarkastellaan entisten huippu-urheilijoiden uran jälkeistä elämää ja työllistymistä perustuu entisille suomalaisille huipputason jääkiekkoilijoille, yleisurheilijoille ja uimareille lähetettyyn kyselyyn.

Tutkimuksen tuloksista voi havaita, että vaikka korkeimmalla huipulla olevat urheilijat ansaitsevat huomattavasti uransa aikana, todennäköisyys saavuttaa kyseinen taso on niin pieni, että otettaessa huomioon todennäköisyydet sekä harjoittelun ja kilpailun takia menetetyt työansiot, varsinaisen urheilu-uran aikaisen kassavirran odotusarvo on negatiivinen. Investointi omaan urheilu-uraan näyttäisi kuitenkin samalla olevan investointi omaan osaamispääomaan. Entiset urheilijat ovat pääosin sijoittuneet työelämään hyvin. Kyselyyn vastanneista entisistä urheilijoista 78% kokee, että heidän urheilu-urallaan oli positiivinen vaikutus myöhempään työelämään. Pohjois-Amerikassa tehtyjen tutkimusten mukaan entiset huippu-urheilijat keskimäärin tienaavat koko väeston keskiarvoa suurempaa palkkaa. Tämän tutkimuksen perusteella myös Suomessa tilanne on se, että entisillä huippu-urheilijoilla keskimäärin on koko väestön vastaavaan ikäryhmään verrattuna suurempi keskiarvopalkka. Vaikka yksittäinen urheilija tekee uransa vuoksi valintoja, jotka ovat hänelle urheilu-uran aikana taloudellisesti kannattamattomia, investointi omaan osaamis- ja sosiaaliseen pääomaan on sen verran merkittävä etu myöhempää elämää varten, näyttäisi, että kokonaisuutena ura on kannattava investonti.

Avainsanat Huippu-urheilu, Urheilija, Osaamispääoma

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1 INTRODUCTION

Discussing sports is by no means rational. Most of it is emotions and passion. However, when making decisions as how to build and improve resources to enable involvement in competitive sports, rational thinking is essential. Recently, there has been plenty of discussion on whether or not it is beneficial to invest in sports. The investment returns seem to be negative and there is no positive expected return for the money put in sports. During and after the 2012 London Olympic Games several athletes, businessmen, politicians and reporters took part in this discussion. There were even arguments that athletes should not be sent to Olympics or other international competitions if they are not able to get a medal.

Tuija Brax from the Green Party had a different point of view in her blog August 30th, 2012. She wrote that public support for top level sport is as justified as is the support for top talents in other forms of culture. According to her, support and encouragement are justified for several reasons. Being part of such activity feeds one's creativity, personal development, social interaction, wellbeing and social capital. Also, she writes, cooperation between nations crosses geographical, cultural and political borders even in situations where conditions for practicing international politics have become difficult. Along the lines, Finnish Minister for European Affairs and Foreign Trade Alexander Stubb wrote that Finnish athletes would be good to have on the promotion of exports trips. According to him, many doors open easier for athletes. (Helsingin Sanomat 10.8.2012).

Supporting the points made by both Brax and Stubb, there are several studies conducted in North America that found former athletes having skills attained through sports that help them in the labor market (e.g. Long and Caudill 1991). In these studies it has been found that participating in competitive athletics has a positive impact on one's later income (e.g. Curtis et al., 2003). This would mean that part of the cash flow received from sports may in fact be coming after the actual career as the investment in sporting career may also be an investment in human capital. Auli Pekkala (2011) studied the

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human capital point of view of former Finnish athletes that have become entrepreneurs and found that an athlete's mastery in sports improves also the skills transferable to other parts of life. These findings support the view that competitive sports might offer benefits beyond the sport success itself. Some of these benefits may even be financial.

On the other hand, the ever growing prize money and salary in certain sports have inspired parents to put their children into sports, in which there are possibilities to attain huge amounts of money if the top is reached. This small percentage of athletes that actually do reach the very top give a somewhat false picture on sports being a way to earn easy money.

This study introduces some of the studies done in North America and compares the situation in Finland by introducing a new data set on current employment and income collected from former Finnish athletes. The goal of this study is to analyze whether or not it is financially profitable to invest in a sporting career. This study concentrates on individual perspectives.

1.1   Background and motivation for the study

The effects of participating in competitive sports are much larger than just having a small shot on becoming an international star. As the recent discussion has mainly focused on the number of medals reached at the Olympics, the costs of public support for athletes or the usefulness of sports overall, this study in based on the less seen and analyzed effects competitive sports can have on an individual. Most advantages from sports come from the joy and enjoyment of participating, but those factors are not taken into account in this study. The aim of this study is to examine if the skills acquired in sports will be financially advantageous for an individual.

The financial returns from participating in competitive sports can be reached in two ways: earning sponsor, salary and prize money during one's athletic career and by learning skills or making connections during the career that will enable a better income in life after the sports career. First, the more noticeable way of seeing what one can earn from

participating in sports is to think of the salary, sponsor money and bonuses one can get by being successful in sports. The money earned this way can be significant in certain sports: the average annual income of a Finnish national league ice-hockey player is 63,500 euros, whereas the median annual income for a national league player is 53,000 euros (SM-Liiga 2010). Winning US Open in tennis brings 1,100,000 US dollars (US Open Org. 2010). Yet, the probability of reaching the very top is low. From American athletes competing in high school only 0.08% become professionals in football. In baseball the percentage is 0.6%, men's ice-hockey 0.32%, men's soccer 0.04% and both in men's and women's basketball it is 0.03% (NCAA 2011). According to the Finnish ice-hockey federation, 1% of the Finnish boys playing ice-hockey reach national level and 0.1% becomes what can be recognized as international high-earners in the NHL[1].

The less noticeable way to get financial returns from a competitive sports career come through the connections made and skills learned because of sports participation. These factors may enable a better income after the sports career is over and are considered to be an investment in human capital. Human capital is a term invented by Theodore Schultz (1961). It is a term reflecting the value of our human capacities (Investopedia). Schultz believed that human capital is like any other form of capital as it could be invested in through education and training that will lead to an improvement in the quality and level of production. Gary Becker (2008) writes that intangible assets such as schooling, computer training course, expenditures in medical care and lectures in the virtues of punctuality and honesty are also capital as they raise earnings, improve health or add to a person's good habits over much of his lifetime. According to him, education, training and health are the most important investments in human capital activities. Yet, investing in human capital is not limited to schooling and job training. Alchian and Demsetz (1972) wrote that skills that may enable a better income later in life include self-control, perseverance, discipline, ability to follow orders and skills to cooperate in team production which increases efficiency. According to a regression analysis done by Long

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[1] National Hockey League is a professional ice-hockey league based in North Amercia and regarded as the top level league in the world

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and Caudill (1991), it is particularly sport participation that best teaches these skills. In the same study it is found that these skills have a positive correlation with income earned.

Another evidence that athletes may be acquiring human capital traits which are unattainable by non-athletes and which help benefit them in the labor market is associated with the allocation of time model first proposed by Gary Becker (1965). This model is used in studies conducted to student-athletes in the United States. It is assumed that students have three ways to allocate their time: academics, athletics, and leisure. Students who choose to participate in athletics must be willing to devote a large amount of time to the sport. Time commitments include things such as practice, training, meetings, travel, games, and other forms of game preparations. This being the case, student-athletes would need to allocate less time to academic activities such as homework, studying, and attending class or leisure activities such as sleeping, social interaction, and recreation than non-athletes. If a student-athlete's grades are lower than non-athletes, then one can assume that students choose to take more time away from academic endeavors than leisure activities. Argument about lower grades is supported by the fact that the NCAA has discovered that athletes have lower grades on average than non-athletes in a study done by College Sport Projects (Emerson, 2010). Yet, the Cooperative Institutional Research Program reveals that men who participated in athletics received 3000 US dollars a year in higher wages that those who did not participate (Curtis et al. 2003). Similar finding are present in other studies: Long and Caudill (1991) estimate a wage function and find that former male athletes six years after college graduation earn a wage premium of 4% whereas Barron et al. (2000) used National Longitudinal Survey of Youth and found that men at average age of 31 who had participated in highs school athletics were paid 12% higher wages than those that had not participated. Also Eide and Ronan (2001) support the argument by finding from a data collected from "High School and Beyond" survey that male, regardless of race, earn an income premium for participating in athletics. Given these results, time allocated to athletics can be assumed to be some form of human capital training.

The motivation for this study is to find whether such findings also hold for the Finnish athletes. If this is the case, then investing time and money into one's athletic career may be financially beneficial and participating in competitive sports may be financially beneficial for an individual in other ways than just the money earned during the actual sport career.

1.2 Research problem and scope of the study

This study analyses whether or not it is financially profitable for an individual to invest in a competitive sports career and compares the probabilities and expected returns in different sports. This study contributes to the existing literature on sports as an investment by bringing new empirical evidence from the Finnish athletes with a unique dataset. The study will also analyze the ways in which the profits can be reached and whether there are sports or situations that make the probability of financial returns lower or higher. The investment returns are calculated from returns for an individual person. Money invested is the money personally invested in the career and the return is the income received by the individual athlete. Personally invested money means both the money invested by the person him or herself or by his or her family. The probability for an athlete to become good enough to earn through sports will be examined as well as the possible wage premium received once starting a working career. The study is motivated by questions:

- Is it profitable to invest in a sports career?
- Does sports career increase one's human and social capital in a way that brings financial returns later in life?
- Are the differences in investment horizons
  - A) Short-term: What is the expected return during the sports career
  - B) Long-term: Effects on earnings potential after the sports career (wage premium)
- How do the net present values vary between different sports?

The athletes studied come from track and field, swimming and ice-hockey in Finland. Athletes from these different sports will be studied both together and separately. The financials during sports career are studied for ice-hockey and track and field. These sports are chosen in order to have both a team and an individual sport. In addition, both of these sports are popular regardless of the geographic location within Finland so the numbers are big enough. From team sports, ice-hockey is chosen instead of soccer regardless of the lower number of junior level participants because ice-hockey draws financial attraction with collecting the biggest sponsor money. In 2009, the share of ice-hockey was 25 million out of the 95 million that sport collected in total (Sponsoribarometri 2010). Also, even though there are differences in the cost of participating in these sports, they can be reached by most children in Finland regardless of his or her background.

1.3   Limitations of the study

Most of the studies related to the income premium from participating in competitive athletics are done in the US, while this study focuses on Finland. Due to the different systems of the two countries, results are not fully comparable. Also, the surveys and interviews done for Finnish athletes in this study may include less background information and a smaller sample than large American academic studies.

The empirical research of this study is conducted with a one year data, and therefore, the data obtained is only a snapshot. The sample for this study is from athletes being on top in 1992. The field of sports has changed dramatically during the last two decades. In some sports one must become a professional athlete much younger today and the effect this may have on education is not fully seen when comparing today's athletes to the age group that already has moved to the working life.

The data sample includes only 3 different sports, which together account for 23% of Finnish young athletes in year 1992 (calculated from Puronaho 2006). Due to low

numbers of female athletes in ice-hockey during 1992, females are only studied in track and field and swimming.

It is difficult to fully proof that the potential higher income received by an individual is due to participating in sports. The individuals that start competing may be individuals that have many beneficial qualities already when they start competing and would have these qualities in the labor market even without a sports career.

Different sports are very different in nature. Team sports are distinct from individual sports as they require more scheduling according to team practice and it is more difficult to get personal sponsor money. Athletics instead require training periods abroad when living in a climate like Finland. The differences must be taken into account when comparing the results.

1.4   Structure of the study

The rest of the paper is organized as follows: In section 2, the key concepts and methods used to analyze the data are introduced. Section 3 introduces literature and previous study done on the topic. In the fourth section the hypothesis is presented. In section 5, the current situation in the Finnish scene of competitive athletics will be discussed. Section 6 introduces data and covers the methodology used to collect it. Empirical results are presented in Section 7. Finally, section 8 concludes and section 9 provides suggestions for future research.

2 KEY CONCEPTS AND OVERVIEW OF METHODS USED

This section defines the key concepts and goes over the basic methods that are used to analyze the results.

2.1 Definition of a wage premium

A wage premium is the variation of income compared to income of an average person. When investigating the presence of possible wage premium, one's age, gender and education background are taken into account. There is also comparison to peers on the profession a person works at. The length of one's working career in the profession person works during the survey is not taken into account.

2.2 Definition of a competitive athlete

In this study the competitive athlete will be defined as a person that owns a license that is required to participate in official competitions in a particular sport. The amount of times practiced or taken part in an event are not the determining factor, although it is assumed that owning a license signals more time is used to take part in events and to practice a sport. In order to be part of an official sports club and to participate in official competitions a license is required. Thus, an active person that does not own a license is not counted as a competitive athlete. In Finland elite athletes are divided into five different categories based on their economic standing and public financial support: young talents, elite athletes in need of financial support, team athletes on national level, athletes making a living from sports and professional athletes receiving noticeable income from sports (Opetusministeriön työryhmämuistioita ja selvityksiä 2004:17, 21-24).

2.3 Definition of a successful athlete

Nationally successful

In this paper, an individual athlete will be counted as nationally on top if one has been in top 5 in a national championship competition. An athlete participating in team sports will

be considered to be nationally successful if one has participated in the highest ranked league in that sport. The athletes in the sample studied in this paper are athletes that were nationally successful in 1992.

Internationally successful

An individual athlete is considered to be on international level if he has taken part in an International Championship event. Internationally successful is an athlete that has received a medal at such an event. Ice-hockey player will be considered internationally successful if he has played professionally in Kontinental Hockey League (KHL)[2] or National Hockey League (NHL)[3].

2.4   Methods used to calculate investment returns

The methods used to analyze investment returns of a sports career are the same methods that are used to calculate returns when deciding whether or not to take on a project or whether or not to invest in a financial instrument like bonds or stocks. In this paper the investment in an individual's career in competitive sports is considered a purely financial matter when looking at its attractiveness.

A key notion to take into consideration when making decisions on how to invest one's property is the management of the whole portfolio. Portfolio management is defined as a process of combining securities in a portfolio tailored to investor's preferences and needs, monitoring that portfolio, and evaluating its performance (Bodie et al., 2008). According to the portfolio theory, the goal is a formation of optimal portfolio of assets. Investors avoid risk and demand a reward for engaging in risky investments. The reward is taken as a risk premium, the difference between the expected rate of return and that available on alternative risk-free investments. Investor has a personal trade-off between portfolio risk and expected return. To quantify this, a utility function is created. Utility function

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[2] Kontinental Hockey League is a professional ice-hockey league based in Russia.

[3] National Hockey League is a professional ice-hockey league based in North Amercia and regarded as the top level league in the world.

assumes that investor can assign a welfare or "utility" score to any investment portfolio depending on its risk and return. A fundamental principle is that the risk of and the asset separate from the portfolio cannot be evaluated. Investing in one's sports career is such a unique investment that in this paper it is considered to be a separate investment from all other investments even though there might be correlation in real life. As an example, during a recession probability is that both one's stock investment and sponsor money are lower.

2.4.1 Discounted cash flow analysis

Discounted cash flow (DCF) analysis is used to estimate how attractive an investment opportunity is. DCF is a valuation method used to estimate the profitability of an investment opportunity. DCF analysis uses future free cash flow projections and discounts them to arrive at a present value, which is used to evaluate the potential for investment. If the value arrived at through DCF analysis is higher than the current cost of the investment, the opportunity may be a good one (Bodie et al. , 2008).

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + ... + \frac{CF_n}{(1+r)^n}$$

CF = Cash flow

r = discount rate

In this study the cash flow calculations begin when the athlete is fifteen years of age. This age is selected as it is a point were youngsters make decisions on whether they want to fully concentrate on athletic career or just keep sports as a hobby. Also, individuals start to train more; it is the age at which high school is started and it also compares to the age used in the studies conducted in the US, which make it easier to compare the research. If participating in sports costs more than what is returned from it, the cash flow will be negative. The cash flow will turn positive if the athlete starts receiving more money from sports than is used to pay for the expenses involved in participating in it.

First, the DCF analysis will include solely the income from sports career. Second, negative cash flow will include costs involved in participating in competitive sports as well as forgone income due to allocating time in training instead of working at a paying job. Forgone income is calculated based on the average amount of working hours done and pay received by the total population of each age. The numbers come from Statistics Finland. For competitive athletes between ages 15-18 99% of them are also students. The same percentage for athletes competing in the national teams is 98. From athletes over age 18 involved in national teams, 60% are students. Same percentage, 60%, applies for athletes receiving financial support from Olympic committee whereas 48% of the athletes receiving the athlete salary from the State are students (Opiskelevien urheilijoiden taloudellista tilannetta selvittävän työryhmän muistio, 2004). Therefore, the forgone income is calculated based on these percentage numbers of athletes studying and on the amount of working hours done by the students on average. The forgone income is calculated based on these numbers and not on the amount of hours spent training as a non-athlete might be choosing leisure time or other non-paying activity during time used to participate in sports. The possible variation in income for former athletes and median income of population at large bring negative or positive cash flow in the future. These future cash flows will be discussed.

2.4.2 Net Present Value

Net present value (NPV) is the sum of present values of individual cash flows, both positive and negative. The formula for NPV is

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \ldots \frac{C_T}{(1+r)^T}$$

$-C_0$ = Initial investment

C = Cash flow
 r = Discount rate
T = Time

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In order to get a total sum of all cash flows, net present values for different scenarios for an athlete will be calculated.

2.4.3 Expected value

Expected value is the most likely outcome of an event. It is the weighted average of all possible value a random variable can take on. The formula for expected value is

$$E(V) = \sum_{i=1}^{n} P_i \times V_i$$

P = Probability of an event

V = Value of an event.

In this study the expected value is used to calculate the combined expected values of different NPV's.

3   PREVIOUS STUDIES ON THE TOPIC

3.1   Studies on how athletic participation affects graduation and later wage

Studies done in the US are used as background information in this paper as this is the first study of this kind done with Finnish data set. However, in Finland there is a recent study concentrating on how athletic career has affected former athletes in their entrepreneurship endeavours (Pekkala, 2011). This study will be introduced also.

The first study is Long and Caudill (1991). This is a study using data from a survey conducted by American Council on Education. In order to collect this data, over 10,000 students entering American colleges and universities were interviewed first in 1971 and then later in 1981 in order to determine their perceptions about college education, their activities during college and other information including their annual income in 1980. This database contains information on athletic participation of individuals while in college and their labor market activity ten years after their first year of college. Using this data, Long and Caudill empirically estimate the effects of college athletic participation on individual income. It is the first study done with this large database and many of the latter research are based on this study. Long and Caudill argue that athletic participation is a form of human capital investment because athletic participation teaches athletes added discipline, teamwork skills, a strong drive to succeed and a better work ethic. If the student athletes in this study gained more skills, then all else constant, one would expect one's participating in athletics would earn a wage premium compared to non-athletes with similar demographic and academic ability characteristics. The income equation used in this study included ACT scores, college grades and factors for character traits such as "drive", "succeed" and "well off" in order to minimize the possibility that the estimated relationship between athletic participation and labor market activity is biased due to differences in innate ability, motivation, entrepreneurship or related factors between athletes and non-athletes. As the income in this survey is in brackets, ordinary least squares estimation would give biased results. Therefore, a maximum likelihood

procedure dealing with the limited dependent variable problem is used.[4] Long and Caudill estimate a wage function and find that former male athletes six years after college graduation earn a wage premium of approximately 4% in 1980. This is in line with the research done by Curtis et al. (2003). In this study they found a wage premium of 3000 US dollars per year for former male athletes.

Barron et al. (2000) have used allocation of time models to analyze data from the National Longitudinal Survey of Youth and from the National Longitudinal Survey of the High School Class of 1972. The former study discovers that men at an average age of 32 who had participated in high school varsity athletics were paid 31% higher wages than those who had not participated and their college graduation rate was 4% higher than of those that did not participate. The latter study finds that men at an average age of 31 who had participated in high school athletics were paid 12% higher wages than those who had not participated. Barron et al. (2000) conduct a simple allocation of time model that adds two contributing factors to their study: ability and preference for leisure. By introducing controls for ability, the relationship between athletic participation and labor market outcome is reduced. However, they find across both data sets that athletic participation is distinct from participation in other extracurricular activities, which suggests that athletic participation does in fact serve as training activity for human capital.

The third study introduced is Henderson et al. (2005). Long and Caudill is used as a base for this study, but Henderson et al. (2005) use a research method that require less restrictive assumptions that the maximum likelihood techniques: a nonparametric estimation. First, they establish that the wage distribution between athletes and non-athletes is significantly different. Second, they make a statistical argument that athletic participation is the determining factor of the wage distribution and then they apply the Generalized Kernel Estimation[5] procedure to investigate the occupations in which athletes receive a wage premium.

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[4] A limited dependent variable is a variable whose range of possible values is restricted in some important way, introduced by Forrest 1974.
[5] Kern

In 2001 Eide and Ronan published a paper "Is participation in high school athletics an investment or a consumption good? Evidence from high school and beyond." In this study Eide and Ronan look at the impact of high school athletics in 2001, ten years after students graduated from high school. This study uses data from a survey entitled High School and Beyond. In their study, Eide and Ronan refer to an earlier research done by Spreitzer. In his study Speitzer (1994) writes that it is a conventional wisdom that sports participation builds character, improves self-discipline and self-esteem, and teaches participants the value of teamwork. If these traits enhance the future well-being of participants, then sports participation can be viewed as a human capital investment. However, since participation may take away time from other, possibly more productive endeavors such as studying, it is possible that it may have no effect or even a negative effect on the future well-being of participant. Eide and Ronan (2001) find that male athletes, regardless of race, earn an income premium for participating in athletics.

As the income premium mentioned by Eide and Ronan seem to be present even though participating in athletics take away time from other endeavors, it could be concluded that there is an additional theory beyond the allocation of time model to explain these results. This additional theory could be the human capital theory. As mentioned earlier, the human capital theory argues that individuals invest in their human capital to achieve greater labor market outcomes. As investing in the human capital is not limited to schooling and job training, the high school athletes may be acquiring human capital traits which are unattainable by non-athletes and which provide them benefits in the labor market. Brandin Heidbreder (2007) based his paper on earlier research and suggested that athletics may help to enhance self-control, confidence, discipline, ability to work in team settings in the workplace to achieve efficiency, social networking, and other subjective traits which may encourage success in the workplace (Long and Caudill, 1991). Heidbreder also wrote that it has been suggested by Roger Rees and Hans Peter Brandl-Bredenbeck (cited in Curtis et al. 2003) that "body characteristics, for example physical appearance, clothing, eating and exercise habits, and physical ability in sport, have become increasingly important signs by which individuals interpret their sense of self to

themselves and to others while helping to establish their social status among their peers." Students are therefore able to increase their social, cultural, and physical capital by participating in athletics.

Sports participation increasing human capital was also discussed in a Finnish study done by Auli Pekkarinen. She wrote a doctoral thesis for Jyväskylä University, Studies in Business and Economics in 2011 with a topic "Mastery as Capital – How Growth into Elite Athlete and Mastery Capital Advances the Growth into Entrepreneurship". The main research problem in the thesis is: What kind of capital the growth to mastery is generating to the elite athlete's entrepreneurship? The growth to mastery is approached through the capital perspective. The most important result of the study is that the growth to mastery generates resources, the mastery capital. If such finding is present in the results of Finnish research, then it can be assumed that the same form of increase in human capital occurs for Finnish Athletes than do for American Athletes found in the studies introduced above.

Pauli Vuolle (2001) has done research on the life and earnings of athletes during and after their sports careers. The data for this study is based on questionnaires sent to former ice-hockey players and individual athletes. There are two separate times the data is collected. For ice-hockey players the results are from year 2000 whereas the other data is from a study conducted in 1998. Vuolle found that many of the ice-hockey players started competitive sports at age of 6-7 and the more intense training started at age 15-17. For many, the career ended before age 30. The research shows that four out of five national league players would choose sports career again with no doubts if they were to make the decision again. This was the case regardless of the fact that one fourth of the players indicated that their career caused difficulties with getting the wanted education. The lack of education, however, was compensated by the fact that most responded that their career had a positive effect on later employment. Most of the responders had made a good transition to labor market after their sports career and were happy with their current lives. It is mentioned that the picture may be more positive than reality as among those not responding the survey sent for Vuolle's study were players who were unable to make a

good transition from sports career to life after it. One third of the player's did not respond to the survey.

3.2   Studies on the expenses of sports participation

The money spent on sports and training by households and individuals is a field that has been studied little. According to Renson and Careel (1986) some sociologists like Luschen (1969), Webb (1969) and Burge (1969) had been noticing a correlation between high socio-economic status and individual sports as well as a correlation between low socio-economic status and team sports. Renson continued his studies on this topic and came up with "Social status pyramid of sport in Belgium". Typical to sports on top of this pyramid is that they require "sticks" acting as a symbol of status and money. Examples of these "sticks" are tennis racquets and golf clubs.

Taks, Renson and Vanreusel (1995) collected articles about costs of sports participation for a journal article. They found both studies in which costs were estimated in general and each sport separately. The motivations behind such studies have been willingness to estimate the macroeconomic factors of sports in a certain country or the effects of costs to sports participation. As in this study the goal is to minimize the effects of socioeconomic or other similar factors that may later have an effect on later labor market activity, sports from the top of the socioeconomic pyramid are not focused on.

In Finland one of the first studies about this matter was done by Vuolle, Telama and Laakso (1986). As part of this study Juppi and Vuolle (1986) found that already in mid-1980, the society had created a good base for practicing sports but the athlete himself or his family had to pay for part of costs involved in participating. The more technical the sport was the more investment was required already in early stages of career.

The largest study on costs for the individual family and consumers involved in sports in Finland is conducted by Kari Puronaho (2006). He has studied the expenses involved in

youngsters' participation in sports by reviewing literature and surveying 1572 households with 6-18 year-old children and youngsters involved in sport activities in sport clubs in Finland. His study takes into account costs caused by rent of sport facilities, travelling, business activities, equipment, coaching and competitions. His study touches partly the same topics and issues that are discussed in the studies introduced above. He finds that many young athletes finish participating in athletics due to time constraints and choose to participate in other activities such as studies or leisure as suggested in the allocation of time model. Most of these drop-outs[6] occur at ages when studying and school start taking more time. Puronaho studied 24 different sport federations and found that at age 11 there are 20,000 license holders but at age 20, the number of persons owning a license to compete has dropped to 5,000. He found that the costs have increased over the last decade and that many sport activities are today expensive due to obligatory costs. There are also noticeable variations between different sports. The most expensive sports from those that were researched are figure skating, horse riding and skiing. The ones on the cheaper end are volleyball, Finnish baseball and swimming. Although it is very small, there is a correlation between the income of family and the sports children participate in.

Keijo Kylänpää (2001) wrote a research paper for his bachelor's degree on how the budget formulated between years 2005-2009 for the athletes being part of the Finnish Olympic Committee program for young top athletes. He got the data for this research from the Finnish Olympic Committee. Results from this paper will be used to estimate the costs incurred from sports and the aid received by a young athlete.

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[6] Drop-outs here refer to young people who stop participating in a certain sport for one reason or other

4 HYPOTHESES

In this section hypotheses based on public discussion, interviews, own experience and earlier research will be formulated.

For athletes reaching the international top level, the investment in their career is very profitable. Especially in ice-hockey the salary received on the professional level is noticeable. In track and field, international stars receive a good amount of money at a young age but not the millions available to the best ice-hockey or soccer players. Yet, the probability to reach the international level in both of these sports is very low and therefore the expected return based solely on one's sports career is negative.

Hypothesis 1 (H1): Individual star athletes earn notable amount of money from sports. However, the amount of individuals trying to become such stars is very large and therefore the probability (P) of becoming a star is low. Investing in sports career from purely a financial point of view almost always involves negative cash flow at the beginning and if P for becoming a high earning star is low enough, even the big earning potential does not turn expected NPV positive during sports career.

Hypothesis 2 (H2) : With the high risk involved in sports career as a financial investment, athletic career is not the most efficient use of money when calculated the earnings made with sports itself. Other investments such as bonds and stocks would have a higher expected return.

In their study, Long and Caudill (1991) came up with a conclusion that athletic participation best teaches the skills advantageous in a job after sports career. They find a wage premium of 4% for former athletes compared to population in general. Also, Cooperative Institutional Research Program reveals that men who participated in athletics received 3000 US dollars a year in higher wages that those who did not participate (Curtis et al. 2003). There are differences between Finnish and North American sporting cultures and how former athletes transfer to working life but yet the skills learned should be same. If one's career in the labor market is better paying than the one people on average have, it can be concluded that former athletes have accumulated skills during their career that are beneficial.

Hypothesis 3 (H3) : Based on earlier research done mainly in North America, athletes have gained such assets in form of human and social capital from sports during their career that they are receiving financial returns from their sports career later in life in form of a better than average positions and pay in their jobs. Competitive sports in Finland require same things from individuals than it does in North America and therefore the skills should develop similarly among the Finnish athletes. If this is the case and there are no other restrictions for former athletes to get a job in Finland, a same kind of wage premium should be present also in Finland.

Hypothesis 4 (H4): Investing in a career in sports with potential to earn the most money at the very top involves so much risk that the expected NPV is not higher in these sports compared to sports with smaller money on the top, but a person participating in competitive athletics will learn skills that give former athletes a wage premium compared to average population. If this is the case, the main advantages from a sports career may come in the form of increased human capital and the athletic career can be said to be beneficial and an investment for the future. Therefore athletic participation is an investment in the future that brings also financial profits in some form although it is not as profitable as many other forms of investments when using traditional ways to decide whether or not take on an investment opportunity.

5   EVIDENCE FROM THE FINNISH ATHLETES

In this section the data collected and used to make calculations on investment returns will be introduced.

5.1   Probability to reach the top in different sports

The probability to reach top in a sport is calculated using a binomial probability formula.

$$P \text{ (k successes in n athletes)} = \binom{n}{k} p^k q^{n-k}$$

n = number of athletes
k = number of successes (success= reaching national or international top-level)
n – k = number of failures
p = probability of success for an individual athlete
q = 1 – p = probability of failure for an individual athlete

5.2   Number of competitive athletes in different sports

The number of competitive athletes in a sport will be calculated based on the number of individuals that own a license to participate in official competitions of a particular sport. The sample data was collected from athletes who were on top in 1992. This time was chosen since there is a large enough portion of athletes that have already finished their sports career and begun working.

5.3   Portion of athletes that have become successful

Nationally Successful

The portions of athletes that have reached national top are calculated by comparing the number of athletes becoming nationally top ranked to the total number of athletes competing. To get a percentage, the number athletes having competed at the age of 15 years is compared to the number of athletes that have reached the top and are born in a certain year.

Internationally Successful

The portions of athletes that have become internationally top-ranked are calculated by comparing the number athletes having competed at the age of 15 years to the number of athletes that have become internationally top ranked and are born in a certain year. As the number of athletes becoming internationally top-ranked is small and in certain sport athletes born in a certain year this number can be either zero or much larger than in other years, a yearly average number of athletes reaching the international top during a ten year period is used.

5.4 Ways to make money in different sports during sports career

The chances to make money vary in the sports studied. The income consists of prize money, sponsor contracts, success bonuses from the own federation, different allowances and the so called athlete salary[7]. An individual athlete may receive income from all these sources, but in most cases only some of them apply.

5.4.1 Chances of making money at national level

When at the national level, individual may get money from different sources. These sources include sponsors, prize money from competitions, support from the Finnish Olympic Committee or sport federation and so called athlete salary from the government. In addition there is scholarship money available for athletes who are students. The athlete salary is only applicable for athletes participating in individual sports. Athletes in team sports may receive salary from the team. In 2009, the total amount of sponsor money in Finland was 151 million euros and of this money 100 million was for sports. 25 million of this goes to ice-hockey (Sponsoribarometri 2011).

Some of the sports included in this study enable an athlete that has reached the national top level to earn a great amount of money. The amount of sponsor and salary money for individual athletes is estimated based on interviews done to athletes involved in these

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[7] Athlete salary is a monthly sum paid from money from the Finnish Lottery System. The money is tax-free and therefore in the NPV calculations the amount is transformed into an amount comparable to taxable salary. The small athlete salary is 7,500 euros per year and the large salary is 15,000 euros per year.

sports as well as publicly reported taxable income for individuals on the national or international top level. As for ice-hockey, the money received on national level is based on the median income received by a player playing in the Finnish National League (SM-Liiga). The median income comes from a survey done by Finnish player's association in 2008.

5.4.2 Chances of making money at international level

The chances of making money at international level consist of similar things as on national level. Yet, the prize money from certain competitions is more noticeable. Also, the value of sponsor contracts for athletes competing on international level is greater. For ice-hockey, estimation of median for Finnish players in NHL and KHL is used.

5.5 Expenses for a competitive athlete in different sports

The data on the expenses of participating in competitive sports come mainly from Kari Puronaho's research referred to above on pages 17-18. The number of times participated in practice and competitions are taken into account as well as the cost of each event. Expenses caused by equipment purchases are taken into account as well as costs due to travel, camps, coaching etc. The costs involved in building the facilities are not taken into account as it is a cost born by the Finnish government, city or municipality, not directly the individual himself.

6 DATA

Data used in this study is divided into two parts. First part includes data obtained from various publicly available sources such as Statistics Finland, sports federations and earlier research as well as lists of teams, results and statistics. The second part of the data comes from a questionnaire send to 104 former athletes particularly for the purposes of this study.

6.1 Population and data sources

Population is formed by the Finnish competitive athletes in three different sports: ice-hockey, track and field, and swimming. Data is collected from various sources. The data includes the number of people owning a license in these sports at age 15, the number of athletes reaching the top in these sports, the costs associated with each of these sports and the possible income received through sports while competing. Unique data for this particular paper is collected from a sample of 104 former top-athletes who were on top in year 1992.

The number of athletes owning a license in each sport comes from information collected from each sports federation. The number of athletes reaching the top as specified in this particular paper is calculated from the statistics from various competitions, the list of Finnish ice-hockey players and the website of the Finnish Sports Museum. For ice-hockey, numbers are also based on the data from Finnish National League (SM-Liiga) and data on Finnish players playing in Kontinental Hockey League (KHL) and National Hockey League (NHL).

All data on costs of participating in competitive sport at ages 15-17 come from an earlier introduced study made by Kari Puronaho (2006). From age 17, the costs of participating in competitive individual sport (track and field) for the athletes starting to reach the top come from Keijo Kylänpää's (2011) survey for young athletes that are part of the Finnish

Olympic Committee support group. Numbers for more successful adult athletes come from interviews.

The numbers for income from sports are based on different methods for each sport. For ice-hockey, salary of players in Finnish league comes from a yearly survey made by the player's association. For the players playing in NHL numbers come from salaries that are public. As for track and field, the numbers are estimates based on interviews done for athletes and the public information on current taxable income.

The data regarding athlete's later wages and employment comes from a questionnaire sent to 104 former top-level athletes. The sample was chosen from athletes being on top in 1992. Year 1992 was chosen in order to have a sample of which most had already finished their sports career and transferred into labor market. Twenty years was estimated to be a sufficient time. Athletes were from three different sports: ice-hockey, swimming, and track and field. Portion of women was only 19% due to the fact that questionnaire was only sent to female swimmers and track and field athletes. Reason for this was that the population of female ice-hockey players in 1992 was too small to give credible results. Discussion on the possible skewness of the one's answering compared to those not answering is included later in the empirical results section. Questionnaire was different for male and female as for the brackets in the part asking about monthly salary; other parts were identical. The difference was due to differences in men's and women's average salary for Finnish population as a whole. In order to compare former athlete's salary to whole population's average salary it was necessary to have different brackets for men and women in the questionnaire as well.

The criteria for being a top-level athlete in this study were different in these three sports as the sports are different in nature. As for ice-hockey players, the criterion was playing on the national league level. In order to have a random sample that includes both stars and individuals with only little playing time, whole teams were selected. These teams were also from different geographical locations. For swimming and track and field athletes, the criterion was finishing top 5 in a national championship event. The sample

was conducted from the top 5 finishers in year 1992. The exact year was chosen in order to keep the sample as random as possible and not to pick only the ones having been or becoming later the most successful ones.

6.2 New obtained data

The sample size for the survey sent to former top athletes was 104. The survey was sent to these athletes first in August 2012. Response percentage was 71%. The response rate varied somewhat between sports. Figure 1 describes the answering percentage between sports.

FIGURE 1

Answering percentage

Answering percentage is described as a percentage of responders out of the total number of athletes to whom the survey was sent within each sport and as a percentage of the total responders compared to total number of athletes to whom the survey was sent.

N=104
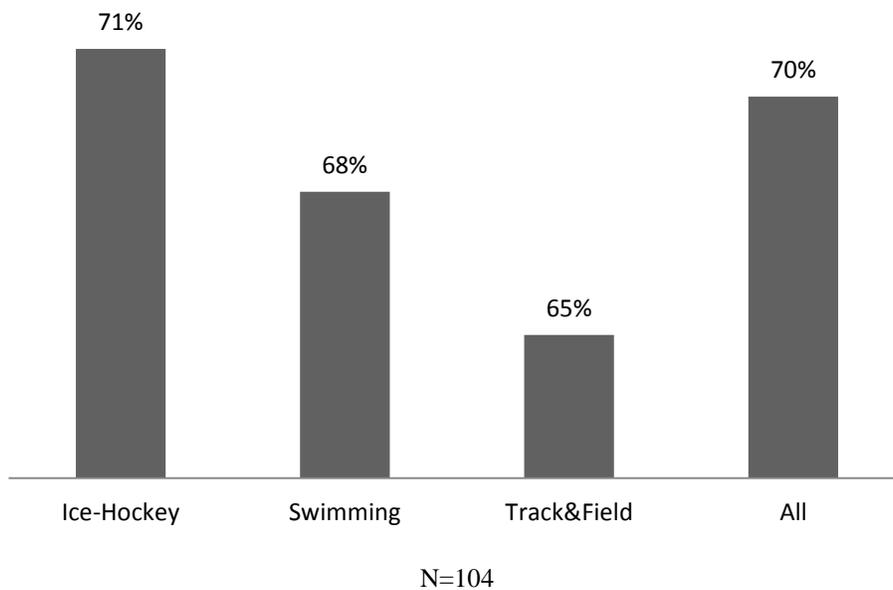
Representation for different sports in the sample was so that from the male population that received the questionnaire (83 athletes), ice-hockey players comprised 67% whereas the numbers for swimming (17%) and track and field (16%) were fairly balanced. From the female population (21 athletes), 55 % represented track and field and 45% represented swimming.

FIGURE 2
Different sports in the sample

These pie charts demonstrate the portions of athletes in the sample from each of the three sports in the survey. For women, there were only two sports due to the small population of female ice-hockey players in 1992.

Sample percentage of men for different sports

Sample percentage of women for different sports

N=83

N=21
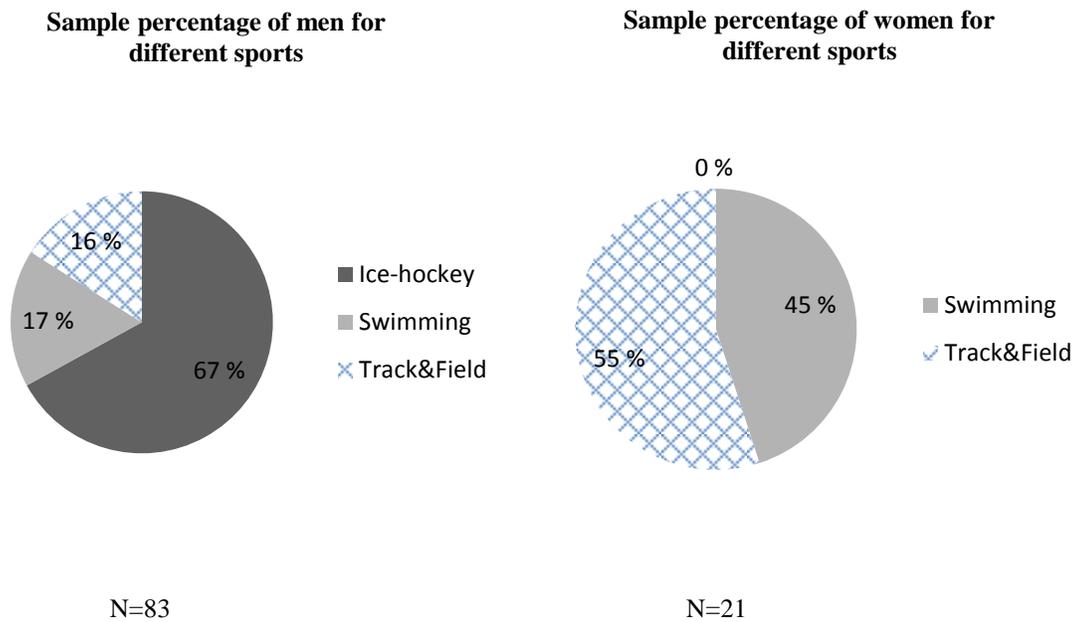
7 RESULTS AND ANALYSIS

This section presents the results of calculations from data collected from various sources. Also, the responses from the survey sent will be introduced. An analysis will be done based on all data introduced.

7.1 Probability to reach the top

The probability to reach the top in each of the sports is calculated based on the number of 15-year old license owners in each sport compared to the number of athletes who were born in a one year period and have reached the top in the respective sport.

The numbers of 15-year license owners were taken from 2011 and therefore the comparison to the age group being 15 about 10 years earlier and having reached the top is not accurate. However, the variation in the number of license owners between different years has not been so significant that it would influence the main conclusions of this study. To get a reasonably accurate estimate on the number of athletes born in a one year period and having reached the top, the individuals born between years 1985-1988 were considered. A period of four consecutive birth years (1985-1988) was considered adequate to minimize the random variation between birth years. The total number of top athletes taken into account in the study was then divided by four to get an average number for athletes born in one year's time.

TABLE 1
Number of license owners
This table illustrates the number of 15-year old athletes owning a license in each of the sport studied (Information received from each sports federation).

Sport	Number of licenses for athletes age 15
Ice-hockey (male)	2619
Swimming	995
Track and field	1231

To get a better estimate on the probability, the number of athletes born between years 1985-1988 being on top currently or within recent years is calculated. After the number is calculated, it is divided by four to get an average number for athletes born in one certain year, and compared to the number of 15-year license owners. A period of four consecutive birth years (1985-1988) is used in order to minimize the effect of one certain birth year an unusually small or large number of individuals reaching the top level. The number of 15-year license owners are from 2011 and therefore the comparison to the age group born between 1985-1988 and reaching the top is not perfect, but the variation in license owners between different years in not significant for these probability calculations. Numbers are calculated for ice-hockey from one season. For track and field, numbers are calculated from three different competitions that are held during a time when it was most probable for athletes born these years to be on top. It is possible that individual athletes have reached the level for a short time outside these times but the number is too small to be significant in the expected return and NPV calculations. For ice-hockey it is also possible to have a player play in a high earning league only for a short time but in NPV calculations the career is estimated to last the length of average career (9,1 years according to player's association 2008 survey). These two things are estimated to balance each other out. Similar to track and field, the remaining difference is too small to be significant in the NPV calculation.

TABLE 2

Number of individuals reaching the top per year on average

The average number of athletes born in one year and reaching the top is calculated based on the number of athletes reaching the top and born in four consecutive birth years(Finnish sports museum, SM-Liiga website, Kalevan Kisat results service).

Ice-Hockey	**Number of players born in 1985-1988, playing in 2012**	**Average number of players born in certain year**
SM-Liiga	104	26
NHL	9	2,25
KHL	11	2,75

Track and Field[8]	**Number of different athletes born between 1985-1988**	**Average number of medalists per year**
Kalevan Kisat, medalists	64	16
International Championship participants	15	3,75
International Championship medalists *	9	0,9

*medalists calculated from period 2000-2010, total number of different Finnish medalists

Swimming	**Number of different athletes**	**Average number of athletes per year**
International Championship medalists*	8	0,8

* medalists calculated from period 2000-2010, total number of different Finnish medalists

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[8] Number of medalists for Kalevan Kisat is counted from years 2008-2012. There might be some additional names born between years 1985-1988 who have received a medal outside these years. It is estimated that during these years it was most probable for this particular age group to receive a medal. For international Championship competitions the participants are calculated from years 2010, 2011 and 2012. In 2012 only Olympic Games are used as the European Championship competitions were held in Finland and therefore the number of Finnish athletes competing was noticeably larger than normally.

TABLE 3
Probability of reaching the top

The probability to reach the top is calculated by comparing the average number of individuals born in certain year that reach the top to the number of license owners born at one certain age (age 15). Average number of individuals from one age group reaching the top is calculated from publicly available list of players for teams playing on top levels as well as list of results. The number of license owners at age 15 is based on information received from each sports federation.

Ice-Hockey

$$P(\text{SM} - \text{Liiga}) = \frac{26}{2619} = 0{,}0099 = 0{,}99\%$$

$$P(\text{NHL}) = \frac{2{,}25}{2619} = 0{,}0009 = 0{,}09\%$$

$$P(\text{KHL}) = \frac{2{,}75}{2619} = 0{,}0011 = 0{,}11\%$$

Track and Field

$$P(\text{National Championship Medal}) = \frac{16}{1231} = 0{,}01299 = 1{,}3\%$$

$$P(\text{International Championship Participation}) = \frac{3{,}75}{1231} = 0{,}003 = 0{,}3\%$$

$$P(\text{International Championship Medal}) = \frac{0{,}9}{1231} = 0{,}0007 = 0{,}07\%$$

Swimming

$$P(\text{International Championship Medal}) = \frac{0{,}8}{995} = 0{,}000804 = 0{,}08\%$$

7.2   Effect of sports career on the life outside competition

In order to investigate whether the sports career has had an effect in former athletes' lives, a survey about their experiences on sports career and one's own current situation was sent out. The main purpose of this survey was to find out if there is some financial premium in the form of higher than average wages for former athletes after their sports career is over and they have transferred to the labor market.

Background information

Education

Education is important background information as the average salaries in later life vary notably depending on one's education level. Therefore it was necessary to have in the survey a question regarding one's education level in order to get a more reliable result as for a possible variation in former athletes' salary compared to that of averages of whole population. Overall, it seems that former athletes are well educated compared to population in general. Figure 3 illustrates this note.

FIGURE 3
Education
Chart indicates different education levels for Finnish population (Statistics Finland) and former athletes (questionnaire).

Education level for Finnish population age 40-44 (men)

- Basic level
- Mid level
- Bachelor's
- Master's
- PhD

1 %
11 %
19 %
22 %
47 %
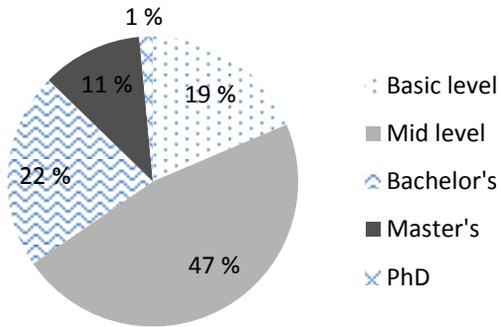
Education level for all three sports (men)

- Basic level
- Mid level
- Bachelor
- Master's
- PhD

4 %
14 %
20 %
31 %
31 %

Education level for Finnish population age 40-44 (women)

- Basic level
- Mid level
- Bachelor's
- Master's
- PhD

1 %
15 %
11 %
35 %
38 %
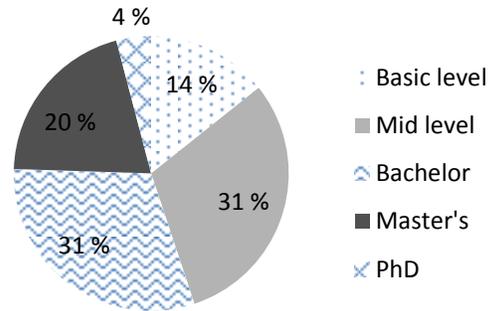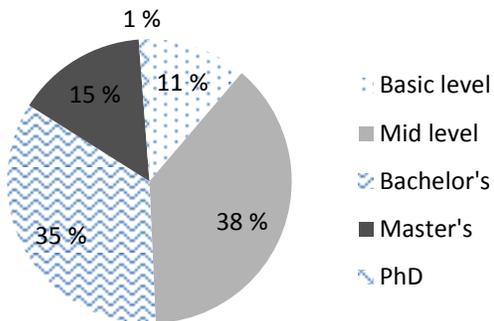
Education level for both two sports (women)

- Basic level
- Mid level
- Bachelor's
- Master's
- PhD

0 % 0 %
11 %
33 %
56 %
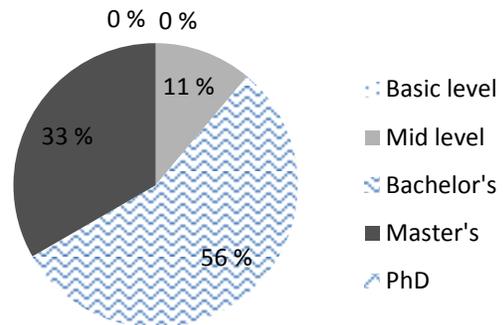
Ice-hockey (men)
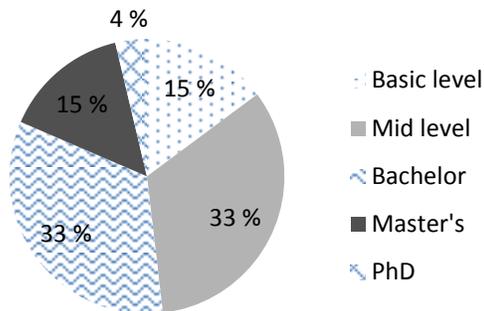
Track&field (men)
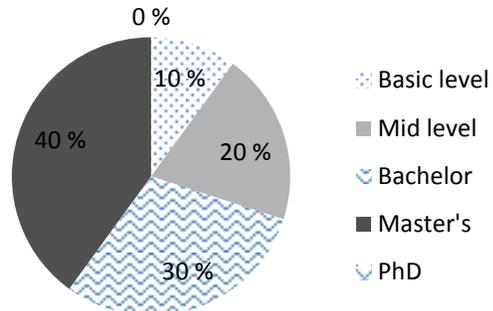
Swimming (men)
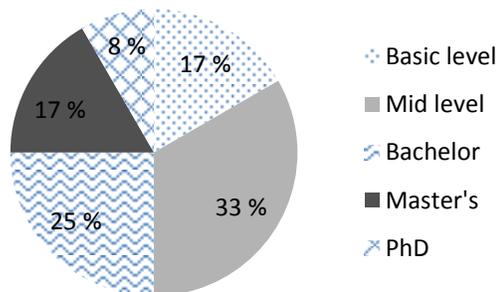
Based on the data from the survey, former athletes do have a better education. For the whole Finnish male population age 40-44, 81% have at least a mid-level education whereas the percentage for former athletes in the sample is 86%. The respective percentages for one's having at least a bachelor's degree are 44% and 55%. Noteworthy from the education charts is especially the high level of education for women, 89% of the responders have at least a bachelor's degree. Yet, a possible bias towards better education for former athletes must be taken into account when looking at these percentages. Reason for the possible bias is that it is assumed that those former athletes that have higher education were more active in responding the survey.

Regardless of the possible bias, these findings are in line with the research done for Finnish Olympic teams in Beijing Summer Olympics 2008 and Vancouver Winter Olympics 2010 (Tuuli Merikoski 2010). From the 2008 Beijing team 2/3 of all athletes had either a degree or a studying spot in higher level education (korkea-aste). Higher level education here means bachelor's, master's or PhD degree. From the Vancouver 2010 Winter Olympic Team, over 90% had at least a mid-level education (keskiaste) and 1/3 were either currently studying or already had higher level education. From the athletes receiving athlete salary in 2010, only 10% were without either a profession or a studying spot and most of these athletes had just finished high school or were having a year off due to various reasons such as serving in the army. The big difference between Vancouver and Beijing team is because of the large amount of professional male ice-hockey players. The player's association for Finnish ice-hockey players does a yearly survey asking about education among other things. According to this survey, in 2008 30% of the players were studying while playing on national league level. However, the same survey indicated that 78% had plans to study and get an education after their career. This supports the fact that by age 40-44 much more than 30% are likely to have and education even though the player's association 2008 survey and the questionnaire sent to players being on top in 1992 are not fully comparable due to the fact that the scheme for professional teams and players has changed considerably.

Employment

Overall it seems that athletes place well in life after sports and sports career is seen as a positive factor regarding later job career. From the questionnaire sent for this study, 78% of the former male and 75% of the former female athletes answered that their sports career has had a positive effect on later job placement whereas 16% of the male and 15% of the female say that there has been no effect. The percentages for former athletes saying that the effect has been negative were 6% for men and 10% for women.

FIGURE 4

Effect of sports career on employment

In these charts are presented the effects responders indicated their own sporting career having on their own employment (questionnaire). There were three different possibilities to answer the question. Effect of sporting career on later employment was 1) Helpful 2) There was no effect 3) Harmful

Effect of sports career on employment for all three sports (men)
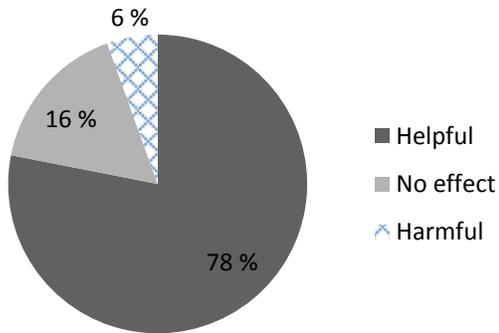
Effect of sports career on employment for all two sports (women)

6 %

16 %

78 %

- Helpful
- No effect
- Harmful

10 %

15 %

75 %

- Helpful
- No effect
- Harmful

Ice-hockey (men)

Track&Field (men)

Swimming (men)

6 %

12 %

82 %

6 %

25 %

69 %

4 %

17 %

79 %
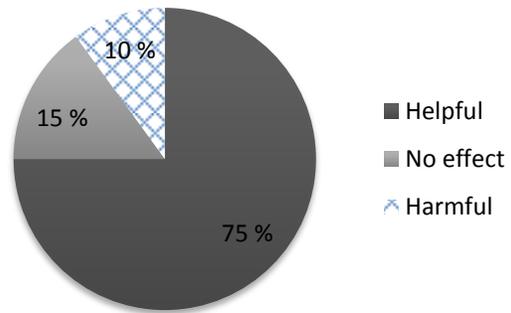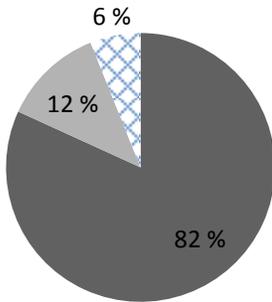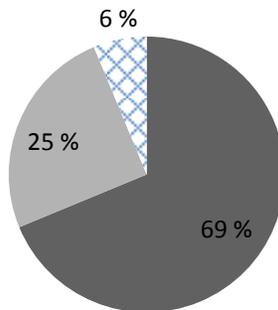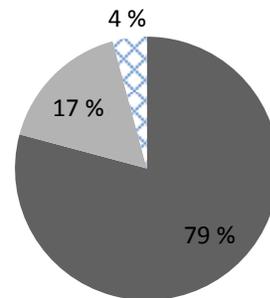
There were three main reasons why the sports career was seen as a positive factor.

1. The contact network from one's sporting career was seen as helpful in both the employment process and during the job.
2. The mental skills learned through sports were the same skills used in job interviews as well as day to day work.
3. Own sports career acted as practical training for the former athletes starting a career in coaching, sports management etc.

Some of the comments received regarding the importance of contacts made during sports career were:

"If you have the will and you take advantage, the contacts made during sports career offer a huge advantage when getting into working life. With those contacts you can compensate the possible lack of formal education."

"It is easier to look for different jobs as there are so many friends and contacts from sports career."

"The media visibility athletes had received in my city was a positive thing when searching for a job after sports career."

"The status ice-hockey has in Finland helps: it opens doors."

"The contact network built during sports career helps significantly"

The mental skills mentioned were skills such as team working skills, goal setting, commitment, perseverance, being goal oriented and work ethic. Some of comments regarding the mental skills learned being advantageous were:

"Because of my sports career I feel I have better than average skills to work as a member of the work community"

"I feel that sports career has had a clear advantage for my research job. A lot of work was done for the main goal of the season and some years you just happen to get ill during that main event. Learning to deal with disappointments and getting back up is a very important skill learned."

"The commitment and high level of expectation that I had during my sports career is part of me and helps me in my current job as well."

"The goal setting learned from sports followed me and I'm currently managing a group of 10 companies with ways I learned through sports."

"My sports career offered me experiences that have been useful later and helped me in my current job."

"My sports career has helped me in several ways. On personal perspective it taught me perseverance, goal setting and work ethic. As for employment, it has been helpful as employers have seen my sports career as a positive asset."

"Sports career gave me tools for both appearance and working under pressure, things which were seen already during the interview process."

"In my job I have achieved results better than average, thanks to the attitude and ways of working learned through my sports career."

The practical training was seen as an advantage for individuals who started a career in sports after own competing career was over.

"I work as a coach so my sports career was good practical training for a coaching career."

"I have moved on to a full time coach in my own sport, so the effect has been only positive. The transition happened almost right after I finished competing."

The negative thoughts were related to the fact that when sports career lasted longer, it meant that one was able to start working career later than his or her peers. This was seen to have delayed one's climb up the corporate ladders.

"Without sporting career I would have 10 more years of seniority and experience, but other than that sports career has had no effect."

"Maybe if I would have ended my career earlier, I would have been able to get more responsibility on my job by now."

Some of the comments reflected to the fact that there was a deep worry about the lack of job experience during one's career. For some it was a negative, but for most of the one's answering the questionnaire, this worry was unnecessary.

"The networking done through sports has had a positive effect on getting employed, but the lack of job experience has had a negative effect."

"I didn't start searching for a "real" job until I was finishing my career and graduating. I was terrified with the lack of job experience. Luckily, it did not scare the one hiring me."

"After finishing my career, I was very surprised on how well I placed in the labor market even though I had practically no job experience by the age of 30. Instead, I was able to

use my sports career in my work in a positive way much more than I would have ever imagined during my sports career."

The problem of deciding which part of the success is due to natural characteristics and which part because of sports participation also came up:

"As being very competitive by nature, I can't necessary tell that it is sports that have helped me succeed"

It must be remembered that the probability of negative comments is higher amongst the ones not answering the questionnaire. In earlier research it has been mentioned that when looking at the employment of very top level athletes it must be remembered that the ones that were talented but never reached the very top are more likely to have difficulties on later employment than those well-known successful athletes (Laine 1997). It needs to be taken into account that for those not being able to get a grab on life after sports there is severe danger of becoming marginalized.

Unemployment rate

From the former male athletes, only 2.9 % indicated having been unwillingly unemployed over a period of 6 months any time after their sports career. As for the whole population in 2011, out of men between ages 35-44, 5.1% were unemployed (Statistics Finland). From the female athletes answering, 3.8% said they had been unwillingly unemployed over a 6 month period any time after their sports career. The unemployment rate for the whole population of female age 35-44 was 4.7 in 2011 (Statistics Finland).

Wage distribution for athletes

About the survey

In the studies introduced some background influences have been minimized by introducing factors that eliminate ethnicity and parent's wealth status as well as dummies for "drive" and "well-off". Factors "drive" and "well-off" are things that were asked from

individuals in the beginning of the survey period. If a respondent rated himself in the highest 10% in "drive and ambition", the "drive" variable concerns him in the regression. The "well-off" dummy categorical variable indicated that being "well-off financially is an important goal" (Henderson et al. 2005). In the questionnaires done in Finland, such factors are not eliminated. Yet, due to free schooling and more homogeneity in ethnic background compared to the United States, the population in Finland in year 1990 was more equal as for chances to participate in sports and also for chances to reach the desired education. As the state and municipality supported much of facilities and as sports are chosen so that they were reachable for most of the population, the family income factors are not taken into account and it is assumed that the effects of ethnic background was indifferent between the whole sample. Therefore, the wage distribution is based on gender, age and education.

Wage for former Finnish athletes

Wage distribution is formed from questions regarding one's monthly salary. The questionnaire included question regarding one's own thought on own salary compared to average salary in the profession one is working at. This question was formed in order to see whether there are variations possibly coming from things such as lack of job experience. Average salaries vary between professions and as there was no separation for each profession in this questionnaire, such question was included. Most responders indicate that their own wage is around average. For men, the portion of one's reporting higher income than average is slightly higher than the one's reporting lower than average wages compared to wage for own profession. For women, the portion of responders indicating higher estimated income than peers is noticeable.

FIGURE 5
Own salary compared to industry average

These charts indicate responders estimation of their own salary compared to the average received in responders own industry. The purpose of the question is to check that there is no significant variation in cases where an individual works at a profession in which an average employer has a different education level.

Own salary vs. estimated salary of peers, all three sports (men)
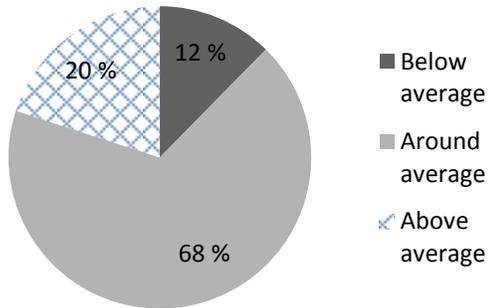
Own salary vs. estimated salary of peers, both two sports (women)
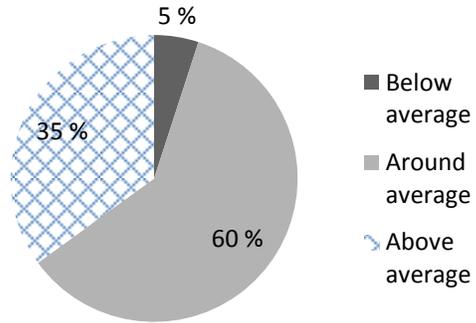
Ice-hockey (men)
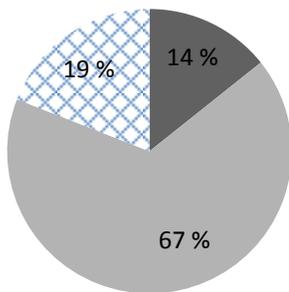
Track&Field (men)
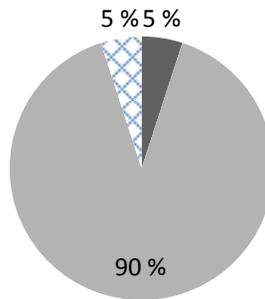
Swimming (men)
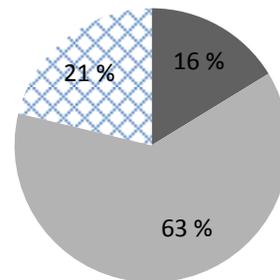
Current wage of former athletes

When looking at the whole Finnish male population between ages 40-44 and comparing to former athletes regardless of education background or sport, 57% of former male athletes report higher monthly inco96,+me than the average for the whole population

(questionnaire and Statistics Finland). For women this number is high, 80%. If these were compared to median monthly averages, the numbers would be higher. Yet, in the questionnaire monthly income was asked using brackets. Therefore, exact number for the percentage of former athletes earning over median cannot be given. When comparing monthly income for similar education level, it seems that especially in the lower educational levels, former athletes have an advantage compared to their peers with similar educational background. When moving towards higher educational levels, the advantage gets smaller and for people with a PhD, there is no difference in average salaries of former athletes and population as a whole. The percentages of former athletes exceeding the average salary of similar educational background for male between ages 40-44 is presented in Figure 6. The N of PhD's is only four total in all three sports and therefore it is only calculated for all sports total, not each sport separately. Also, the N for women is too small for each education level per sport separately to give credible results.

FIGURE 6
Percentage of athletes earning more than average wage

The bar charts indicate percentage of athletes earning over population on average. Comparable population is same age and gender group than athletes in the sample. This means men age 40-44 for former male and women age 40-44 for former female athletes. Education levels are also taken into account. (Questionnaire and Statistics Finland)

Percentage of athletes earning over average, all three sports (men)
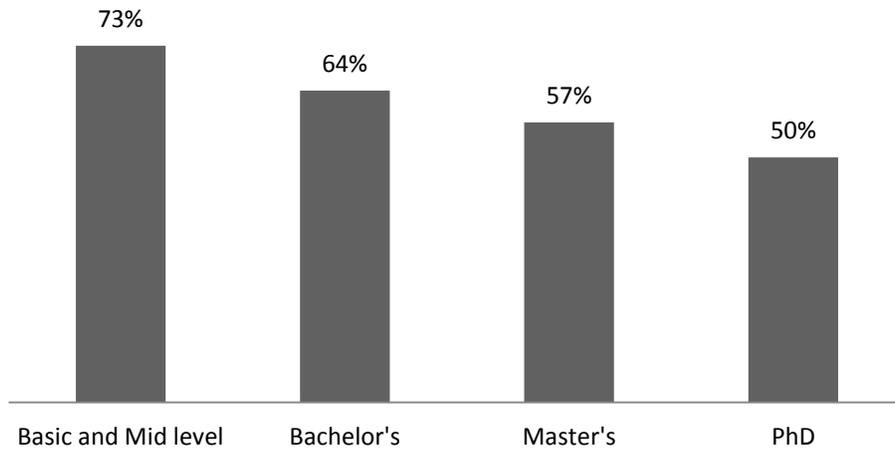
Percentage of athletes earning over average, ice-hockey (men)
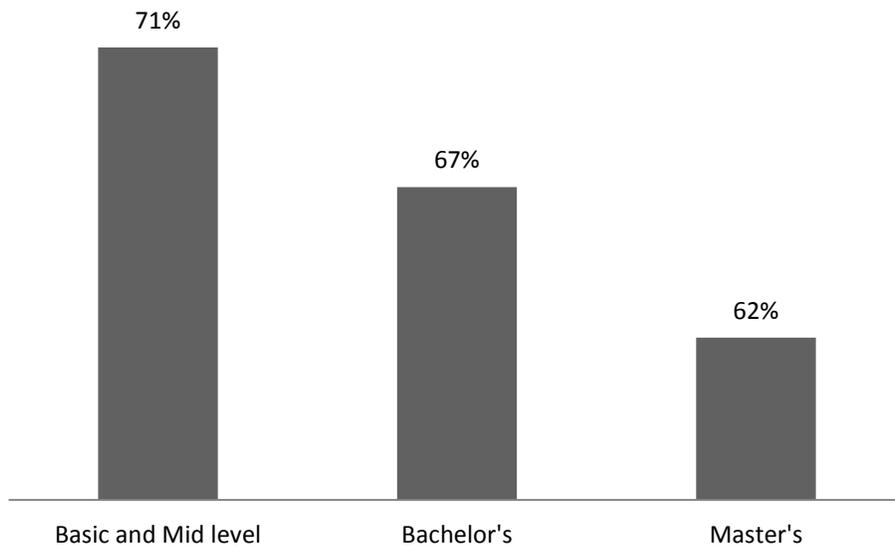
Percentage of athletes earning over average, swimming (men)
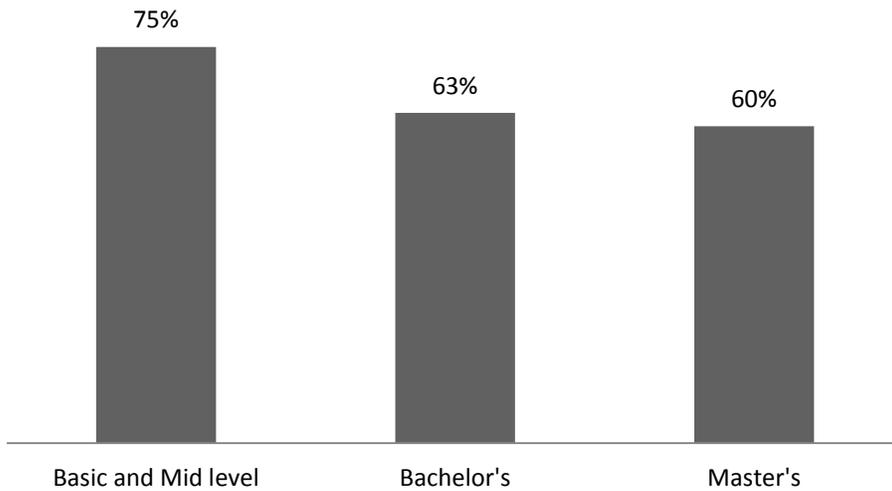
Percentage of athletes earning over average, track and field (men)
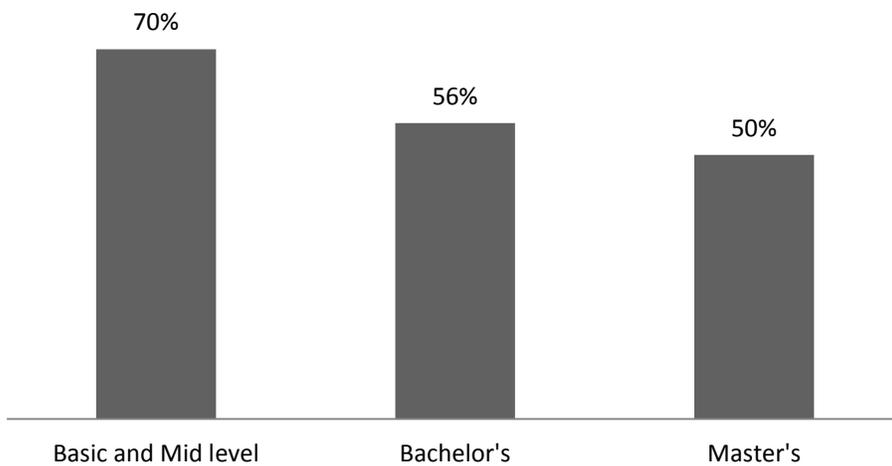
Looking at these figures, it seems that former athletes in Finland in fact do earn some sort of wage premium compared to population on average when taking into account gender, age and education. Combining these findings with background from the earlier research, explanation could be that former athletes have gained some form of human capital, which can be used to compensate certain lack of education. The higher the education level is the more specific skills are needed for jobs placed at with higher degrees. This can be explanation why the differences fade towards the higher end education. In a research studying hockey players life career, it has also been noticed that when getting a profession after sports career, lack of education is somewhat compensated with the social

capital and connections made (Vuolle 2001, Laine 1997). This could help especially in professions requiring lower education. According to previous research, it seems that the most positive transition have had the one's studying or getting an education along with their sports career (Heikkala 1994). A note to point out is that even if the percentage earning over average compared to own education level is higher among the ones having a lower education, the ones having higher education earn more than the ones having lower education. As the competition in jobs normally populated by highly educated people is rather high, it is noteworthy that former athletes have been able to do well even in these positions and compensate the possible lack of job experience with the skills and experience acquired through sports.

7.3 Investment returns

In this section various investment return possibilities from one's sports career will be analyzed. Net present value during actual competing is calculated separately for one individual sport (track and field) and one team sport (ice-hockey). The possible later returns in form of wage premium in job later in life is calculated separately for ice-hockey, swimming and track and field as well as combined for all three sports studied.

7.3.1 Cash flows during the career

The investment returns during one's career are based on the costs involved and income received through sports during the time one is competing. Calculations are done based on estimates on what the cash flow in different scenarios could be. Calculation starts when an individual is at age 15. This time is chosen as it is a time when one has to make some form of decision about wanting to aim at the top level. Also, for this paper it is estimated that costs incurred before are costs for something a young person would do anyway meaning that if he or she would not be involved in sports, he or she would be spending his or her time with other activities that involve costs. Calculations start at age 15 even though for many athletes reaching for the top, costs incurred also before this can be noticeable.

Outgoing cash flow

Cost from sport

For all three sports, expenses for participating in competitive sports for period between ages 15-17 are based on Kari Puronaho's study (2006) introduced earlier in this paper. These costs include coaching, training, equipment and travel. As for costs incurred after the age 17 to track and field athletes, the amount of money spent vary significantly based on the amount of training camps and competitions. Therefore the numbers used in calculations from age 17 onwards are based on Keijo Kylänpää's (2011) survey for young athletes who are part of the Finnish Olympic Committee's support group. Numbers for more successful adult athletes in track and field come from interviews. The numbers used are estimated averages based on data and interviews. Yet, as each individual has his or her own budget, the individual numbers can differ from what any one particular athlete has in reality. It is estimated that once one gets to a higher level, more of the training and coaching expenses are directly paid for by the federation. Expenses come from daily training, from camps and competitions both in Finland and abroad, from coaching expenses, from equipment and from activities such as physiotherapy, massage and possible visits to a doctor. Income is a combination of support received from own club, federation, Finnish Olympic Committee, URA and the Finnish Ministry for Education and Culture. In addition sponsors and possible prize money are used to cover costs and in some cases these sources bring additional income that an athlete receives as taxable income. In the table explaining NPV calculation, increased expenditure for sports is compensated with income in the form of aid received.

Cost in the form of lost income

Lost income is an estimation based on different statistics. It is assumed that from all Finnish young people of age 18, 70% are students and 30% are working at a job requiring mid-level education. For the calculations of this study, an assumption is made that athletes would be students or they would be working full time if they would not be training fulltime for their sport. Therefore unemployment for young people or things such

as voluntary year off before further education are not taken into account in the calculations. Based on statistics, out of the students 20% are working part time and their average hourly wage is 10,32 euros. According to statistics, these 20% work 15 hours per week on average. For 19 year olds, 30% of the students work but other numbers are the same for 18 years old. For ages 20-24, 54% of the students work with an average hourly wage of 12,69 euros (Statistics Finland). From age 25, it is estimated that 50% are students and 50% are working with an average salary for that age group and mid-level education. According to statistics, the average graduation age in Finland is 27,5 years and therefore, the forgone income is estimated to be similar to that age group full time work on average (Statistics Finland).

Incoming cash flow

Income for athletes in different sports comes from different sources. For ice-hockey players, the income for athletes making it to the top comes as salary from their respective club. For track and field, the earning scenarios and sources for income vary between individual athletes. Income for a national championship medalist and an international star are very different and therefore various scenarios are used. These different scenarios are explained Table 4.

Net Present Value

Net present value (NPV) is the sum of present values of individual cash flows, both positive and negative. The formula for NPV is

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \ldots \frac{C_T}{(1+r)^T}$$

$-C_0$ = Initial investment
C = Cash flow
r = Discount rate
T = Time

Table 4 presents calculations on estimated net present values of different scenarios for an athlete's career. To get a total NPV, different scenarios are calculated for a time period of athlete being 15 until 20, 25 or 30, depending on the scenario. As the purpose of all numbers is to estimate some form of average levels, the NPV is not calculated over age 30 even though athletes can continue their career longer than this.

Notable regarding all NPV calculations is that they are made only in order to consider sports career as a financial investment. In this scenario it is assumed that if one does not invest in sports career in the form of money and time, one would exchange the time invested in training to time invested in work and therefore receive pay. In reality, not all people start studying or working at age 18. This, however, is the scenario in these calculations in order to think of the time and money invested in sports purely as a financial matter that could be exchanged to other investment decisions. In real life, many continue with a different combination of competitive sports and part time or full time job and in those cases the forgone income would be smaller and the cost borne by sports participation also would be less than in these calculations.

To calculate the expected NPV, the NPV of each scenario is multiplied by the probability of that particular scenario. The probability for each scenario comes from the earlier calculations on probabilities of reaching a certain success level. Formula used to calculate expected net present value is

$$E(NPV) = \sum_{i=1}^{n} P_i \times NPV_i$$

TABLE 4
Net Present Value calculations

Net present value calculations are calculated using estimated average numbers of different scenarios that can be possible for a 15-year old athlete trying to devote ones time into becoming a very top level athlete. In the table, P for each scenario is the estimated probability of a 15-year old athlete reaching that level if all 15-year old athletes owning a license would work to try and reach the best possible level. There are four scenarios created for a team sport, ice-hockey, and five scenarios for an individual sport, track and field. Lost income is an estimation based on different statistics. It is assumed that from the people age 18, 70% are students and 30% working at a job requiring mid-level education. For these calculations, an assumption is made that athletes would be either students or working full-time if not training full-time for their sport and therefore unemployment for young people or things such as voluntary year off before further education are not taken into account in the calculations. Based on statistics, out of the students 20% are working part-time with average hourly wage of 10,32 euros. According to statistics, these 20% work 15 hours per week on average. For nineteen year olds, 30% of the students work but other numbers remain same. For ages 20-24, 54% of the students work with an average hourly wage of 12,69 euros (Statistics Finland). From age 25, it is estimated that 50% are students and 50% working with an average salary for that age group and mid-level education. According to statistics, the average graduation age in Finland is 27,5 years and therefore, the forgone income is estimated to be similar to that age group full time work on average (Statistics Finland). Discount rate for all calculations is 5%.

The scenarios for ice-hockey are

1) A 15-year old player trying to make it to the top, paying for his participation and making decisions in life outside hockey on basis that the goal is to make sports a profession. At age 20, he has not made it to a level that would indicate a possibility to become a professional and therefore the athlete starts making decisions in his life based on things other than sports and his allocation of time changes. The NPV is calculated from age 15 until age 20. Probability for this option is 98,9% as was calculated on page 30.
2) A 15-year old player starts as in option 1, but at age 18 he is good enough to make it to a national league team. He no longer has to pay for participating, but instead he receives some salary from the team. His career continues in the Finnish National League with an average salary until he is 30. NPV is calculated from age 15 until age 30. Probability for this option is 0,99%.
3) A 15-year old player starts as in option 2, but at age 22 he is good enough to make it to KHL. He plays in that league for 5 years, returns to Finnish League and plays there with a higher than average salary until he is 30. KHL salaries are not public and there is no survey made but the sums are based on public estimates and interviews. NPV is calculated from age 15 until age 30. Probability for this option is 0,011%.
4) A 15-year old player starts as in option 2, but at age 21 he is good enough to get a contract to the NHL. He plays in the NHL until he is 30. The salaries in NHL are public and the numbers are based on the information on Finnish players. There are few very top Finnish players who earn significantly more than these numbers. NPV for this option is calculated from age 15 until age 30. Probability for this option is 0,09%.

The scenarios for track and field are

1) A 15-year old athlete trying to make it to the top, paying for his participation and making decisions in life outside sport on basis that the goal is to make sports a profession. At age 20, he or she has not made it to a level that would indicate a possibility to become a professional and therefore athlete starts making decisions in his life based on things other than sports and allocation of time changes. The NPV is calculated from age 15 until age 20. Probability for this scenario is 98,4%.
2) A 15-year old athlete starts as in option 1, but at age 20 the will to become a top athlete remains. He or she competes at a good national level and is able to get a Finnish national championship medal. The costs incurred from sports are somewhat covered with different aids, but he or she is not good enough to start receiving athlete salary. In the table, these increases in the costs incurred and the cost coverage received are seen both in amounts for cost from sport and expense cover. Yet it is possible to receive the URA aid in case one is also a student. As based on the data for track and field athletes, most of those reaching the national level are also students, URA aid is included. In the early 20's a chance to reach the top remains and time devoted to training prevents possibility to have a paying job. At age 25 a paying job is obligatory as there is no other income but sports career remains. Thus the job is not such as it would be if job would be the first priority. Probability for this scenario is 1.2%
3) A 15-year old athlete starts as in option 2. Athlete is good enough to start receiving small athlete salary at age 21 and large athlete salary at age 24. The expense from sports increase but at the same time the sport related aid, such as finance, paid camps and coaching, increases. Yet, this athlete is not able to draw enough sponsor or prize money that it would bring income over the costs needed for training etc. Probability for this scenario is 0.3%
4) A 15-year athlete starts as in option 2, but is good enough to start receiving young athlete salary at age 21 and full athlete salary at age 23. In this scenario athlete becomes good enough to start competing at an international medal level and he or she is also able to attract sponsor or prize money enough to have more income than covering the costs. Based on public information on taxable income in 2011, there were less than five such track and field athletes in Finland. All of them were male. Probability for this scenario is 0.07%
5) A 15-year athlete starts as in option 2, but is good enough to start receiving young athlete salary at age 21 and full athlete salary at age 23. In this scenario athlete becomes good enough to start competing at an international medal level and becomes an international star which much higher earnings potential than other good Finnish track and field athletes. Looking at a five year period back, in track and field there has been one such athlete in Finland during this period. Assuming there is one such athlete every five years, the probability for this scenario is 0.016%.

ICE-HOCKEY Age	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Scenario 1																
Costs																
Cost of sport	-3154	-3154	-3154	-3154	-3154	-3154										
Forgone income																
Student salary					-1638	-3599										
Salary					-5940	-7524										
Income																
Salary	0	0	0	0	0	0										
Difference	-3154	-3154	-3154	-3154	-10732	-14277										
NPV	**-30247**		**p=0,988**													
Scenario 2																
Costs																
Cost of sport	-3154	-3154	-3154	0	0	0	0	0	0	0	0	0	0	0	0	0
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-29400	-29400	-29400
Income																
Salary				25000	35000	52000	52000	62000	62000	62000	62000	62000	62000	62000	62000	62000
Difference	-3154	-3154	-3154	25000	27422	40877	40877	50877	50877	50002	45097	45097	34004	32600	32600	32600
NPV	**307538**		**p=0,011**													
Scenario 3																
Costs																
Cost of sport	-3154	-3154	-3154	0	0	0	0	0	0	0	0	0	0	0	0	0
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-29400	-29400	-29400
Income																
Salary				25000	35000	52000	62000	200000	400000	500000	300000	300000	200000	150000	100000	100000
Difference	-3154	-3154	-3154	25000	27422	40877	50877	188877	388877	488002	283097	283097	172004	120600	70600	70600
NPV	**1319818**		**p=0,0011**													
Scenario 4																
Costs																
Cost of sport	-3154	-3154	-3154	0	0	0	0	0	0	0	0	0	0	0	0	0
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-29400	-29400	-29400
Income																
Salary				25000	35000	52000	200000	590000	600000	1500000	1500000	1500000	2000000	2500000	2000000	2000000
Difference	-3154	-3154	-3154	25000	27422	40877	188877	578877	588877	1488002	1483097	1483097	1972004	2470600	1970600	1970600
NPV	**7720347**		**p=0,0009**													

TRACK AND FIELD

Age	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Scenario 1																
Costs																
Costs from sport	-1347	-1347	-1347	-1347	-1347	-1347										
Forgone income																
Student salary					-1638	-3599										
Salary					-5940	-7524										
Income																
URA aid																
Athlete Salary																
Difference	-1347	-1347	-1347	-1347	-8925	-12470										
NPV	**-21075**	**p=0,984**														
Scenario 2																
Costs																
Costs from sport	-1347	-1347	-10661	-10661	-10661	-10661	-15000	-15000	-15000	-15000	-15000	-15000	-15000	-15000	-15000	-15000
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-29400	-29400	-29400
Income																
Expense cover			9096	9096	9096	9096	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
URA aid				0	0	0	0	0	2000	0	2000	0	0	0	0	0
Athlete Salary					0	0	0	8333	8333		0	0	0	0	0	0
Other income										10000	10000	12000	20000	20000	25000	25000
Difference	-1347	-1347	-1565	-1565	-9143	-12688	-11123	-2790	-790	-1998	-4903	-4903	-7996	-9400	-4400	-4400
NPV	**-36173**	**p=0,012**														
Scenario 3																
Costs																
Costs from sport	-1347	-1347	-10661	-10661	-10661	-10661	-15000	-15000	-15000	-15000	-15000	-15000	-15000	-15000	-15000	-15000
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-29400	-29400	-29400
Income																
Expense cover			9096	9096	9096	9096	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
URA aid				0	0	0	0	0	2000	0	2000	0	0	0	0	0
Athlete Salary					0	0	0	8333	8333	17647	17647	17647	17647	17647	17647	17647
Difference		-1347	-1565	-1565	-9143	-12688	-11123	-2790	-790	5649	2744	744	-10349	-11753	-11753	-11753
NPV	**-27011**	**p=0,003**														
Scenario 4																
Costs																
Costs from sport	-1347	-1347	-10661	-10661	-10661	-10661	-15000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-36000	-37200	-39600
Income																
Expense cover			9096	9096	9096	9096	15000	20000	20000	20000	20000	20000	20000	20000	20000	20000
URA aid				0	0	0	0	0	2000	0	2000	0	2000	0	0	0
Athlete Salary					0	0	8333	8333	17647	17647	17647	17647	17647	17647	17647	17647
Other income										15000	15000	20000	20000	25000	25000	30000
Difference	-1347	-1347	-1565	-1565	-9143	-12688	-2790	-2790	8524	20649	17744	20744	11651	6647	5447	8047
NPV	**30292**	**p=0,0007**														
Scenario 5																
Costs																
Costs from sport	-1347	-1347	-10661	-10661	-10661	-10661	-15000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000
Forgone income																
Student salary					-1638	-3599	-3599	-3599	-3599	-3599	-2905	-2905				
Salary					-5940	-7524	-7524	-7524	-7524	-8399	-13998	-13998	-27996	-29400	-29400	-29400
Income																
Expense cover			9096	9096	9096	9096	15000	20000	20000	20000	20000	20000	20000	20000	20000	20000
URA aid				0	0	0	0	0	2000	0	2000	0	0	0	0	0
Athlete Salary					0	0	8333	8333	17647	17647	17647	17647	17647	17647	17647	17647
Other income										30000	50000	190000	200000	200000	200000	200000
Difference	-1347	-1347	-1565	-1565	-9143	-12688	-2790	-2790	8524	35649	52744	190744	189651	188247	188247	188247
NPV	**511226**	**p=0,00013**														

Using the net present values and probabilities of different scenarios, the total NPVs during sports career are negative for the one team sport and one individual sport researched.

| Sport	NPV
Ice-hockey	-17713
Track and Field	-21149

The negative NPV is due to the very small probability of reaching a level where notable earnings through sports are possible.

7.3.2   Cash flows after the career

Investment returns after career come from the possible wage premium earned. In order to calculate a possible wage premium with an exact euro amount, taxable income in year 2011 for all the former male athletes from the sample were researched. The reason for choosing only male is the small number of females in the sample. There was no differentiation for education or other factors. This was done in order to have a large enough N for a sample as random as possible. Out of all 2011 incomes for former athletes, top and bottom five percent were not taken into account. For the whole sample, the average income without top and bottom 5% was 3979 euros per month and median was 3625 euros per month (publicly available data on taxable income 2011). The average for men at ages 40-49 out of the whole Finnish population in 2011 was 3688 euros per month whereas median was 3329 (Statistics Finland). Based on this, former male athletes earned on average of 311 euros per month more than comparable age group for the whole population.

FIGURE 7
Average Monthly Income

In the figure is presented monthly income of former athletes in the sample as scatter points (taxable income in 2011). Additionally, the lines represent monthly average for the male athletes in the sample (taxable income in 2011) and for Finnish male population comparable age, which is 40-49 (Statistics Finland). From the sample, top and bottom 5% are disregarded both in the average and the scatter points. Average for former male athletes is 3979 euros per month and average for all Finnish men 40-49 yrs. is 3688 euros per month.
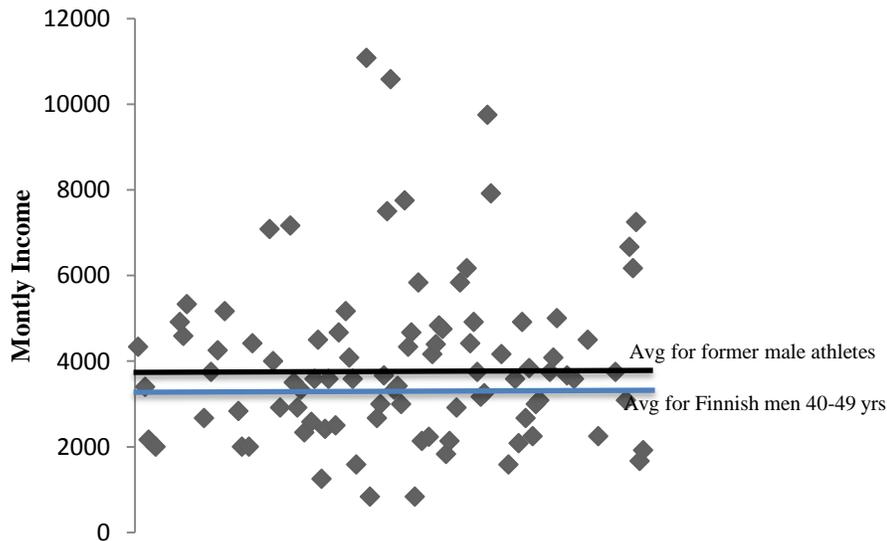
N=95

Using these average monthly incomes, the wage premium per year is 3732 euros per year at age group 40-49. The highest income from the sample group was 281 000 euros per year and lowest 2400 euros per year. It is possible that some of the very low incomes are explained by the fact that the sample included some recently retired former professional athletes. Also, many mentioned that they have stayed involved in their sports. If not coaching in the Finnish National League in ice-hockey, salaries for coaches and personnel of sports teams are fairly low. Based on the salaries, it is estimated that many former athletes of the sample work at positions in the middle management. Compared to the North American studies, Curtis et al. (2001) found in their study that former male athletes earned a wage premium of 3000 US dollars per year and according to Long and Caudill (1991) there was a 4% wage premium in 1980. The 3732 euros or 7% per year wage premium for former athletes in Finland is in line with these studies.

7.3.3 Total cash flows from the sports career

In this chapter the total cash flow from sports career is discussed. The total cash flow consists of the cash flow during the actual sports career and from the possible wage premium former athletes receive after their sports career when placing in the labor market. This wage premium is estimated to come due to the increased human and social capital attained through sports.

The presence of a wage premium and increased human and social capital for former athletes is a conclusion of combining three results of this study. These results come from the questionnaire and public data on taxable income. First, based on taxable income of the sample, there is an average 3732 euros yearly wage premium for former male athletes compared to population as a whole at same age group. Second, as 78% of former athletes indicate that their career has had a positive effect on later employment; it is concluded that sports actually had an effect on later life of former athletes. Third, combining education levels with monthly salary for responders of the questionnaire, on average 58% of former athletes earn more income than their peers with similar gender, age and education level. Due to the third point mentioned, the wage premium is not explained by the fact that all athletes would happen to have higher wage solely due to higher education.

When looking at purely the investment aspect of sports career during that particular career, net present value is negative. This is due to the fact that the probability of making it to the very top is extremely low. It is only very few individuals that can make it there and therefore the costs incurred make the net present value negative. The expected returns from sports career do not vary notably between sports. Reasons for this is that reaching the high earnings level is extremely low and the main costs come from forgone income as athletes need to devote very high amount of hours in things involved in their sporting career when aiming to get to the top. Compared to investments such as stocks, the returns from the sports career do not look attractive. For instance, the ten year Euro

STOXX 50[9] index return has been 3.78% between July 2002 and July 2012 (Bloomberg data). Yet, again, it must be reminded that in the numbers used to calculate returns on sports career, an assumption is made that the career is considered purely a financial matter with a goal of getting investment returns with the help of sports career. In reality this is not the case in most occasions and most athletes make their choices differently so that they study or work simultaneously with their career and therefore amount for forgone income is lower.

As each individual career is different, a clear NPV calculation for the combined sports and work career for an individual athlete cannot be done. Yet, based on the average NPVs during career and the average wage premium, it takes on average about 5 years in the labor market for a former athlete to turn the NPV from his or her career positive also in a financial way if he or she is able to move swiftly to labor market after sports. The best result is reached if the athlete has been able to take care of education while still competing.

Therefore, regardless of the negative NPV during actual sports career, sports career seems to be such a beneficial investment in human and social capital that the combined NPV from both actual sporting career and career after sports is positive.

7.4   Comparison to previous studies

In the papers and literature introduced above in this study, it was found that sports participation acts as a way of developing ones skills such as goal setting, teamwork and therefore increasing human and social capital. It was also found that due to these particular skills together with the connections made, former athletes on average earn higher wages than population in general later in their lives. This existence of higher average wage, referred to as wage premium, is based on the theory of human capital

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[9] The EURO STOXX 50 is a major stock market index which tracks the performance of 50 Blue-chip companies based in twelve Euro Area countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.

introduced by Theodore Schultz. According to Schultz, individuals invest in their human capital to achieve greater labor market outcomes. These investments in own human capital include things such as schooling, but are not limited to studying. Training and competing in sports require, among other things, goal setting and to reach goals lots of perseverance, teamwork and learning from mistakes are needed. Based on earlier research (e.g. Barron et al. 2000) competitive sport acts as the best way to learn these skills. In this study, the wage premium found for former male athletes in Finland was 3732 euros or 7% per year compared to the age group 40-49 within the whole population. In a comparable study done with data on Canadian former athletes, Curtis et al. (2001) found that former male athletes earned a wage premium of 3000 US dollars per year and according to a US study done by Long and Caudill (1991) there was a 4% wage premium in 1980. Taking into account the inflation between 2000 and 2011, the 3000 US dollars found by Curtis et al. (2003) transfers into 3868 US dollars. This sum is in line with the premium found in this study.

8 CONCLUSION

The probability of reaching the top varies between sports, yet in all sports the probability is low, close to one percent at maximum.

Net present value on career itself is negative for all three sports when looking at sports career purely as a way to get financial returns during one's career.

However, former athletes seem to do well in life after their career. The unemployment rate is low with only 2.9% telling about unwilling unemployment for a period of six months or longer any time after their sports career. Out of athletes answering the survey conducted for this paper and sent to 104 former top athletes, 78 % think that sports career has had a positive effect on their later employment. The effect seems to be positive also in the form of later income. Based on the same survey, 59% of these athletes earn higher than average wage compared to their age and gender group. When comparing responders' wages to averages of Finnish population with same age, gender and education, in all but one education level over 50% of athletes earn higher wages than their peers and even for this one, PhD education level, the percentage is 50%. Combining average wages of all former male athletes in the sample to the whole Finnish male population age 40-49, there was an average monthly wage premium of 311 euros.

These findings support the fact that investing in a sports career is also an investment in one's human capital and brings benefits in later life. With this increased human and social capital, former athletes seem to have a wage premium compared to their peers in the same age group. The best overall result as for later income is reached by those individuals that have both the benefits of their sporting career and an education.

For individuals not able to make swift transition from sports career to labor market after sports career, there is a severe risk to become marginalized and therefore it is important to help athletes also in endeavors outside sports already during their career as it seems

that with their increased human and social capital former athletes are a beneficial asset for the whole society.

Reservations

As each individual career is its own story, there are some limitations to this study. First off, the sample size for the questionnaire sent to former athletes was 104 that were on top in 1992. This means that the sample is a snapshot of athletes from that time. Also, the sample was not followed throughout their lives and therefore it is impossible to fully proof that it was purely sports career instead of their natural abilities that made the amount of individuals successful later in life. Based on responders own experience, however, it seemed that particularly sport had been a positive factor regarding later employment. Also, it can be assumed that from the 29% not answering the questionnaire, a bigger percentage than from the 71% answering have not done as well in their life.

9 SUGGESTIONS FOR FUTURE RESEARCH

In this section, suggestions for possible future research are discussed.

As it seems that athletes do well in the labor market, have relatively low unemployment and have gained assets beneficial for also entrepreneurship, investing in sports could be beneficial for the society. A research on the amount of sick leaves and early pension of former athletes would reveal if society saves in social benefit costs. If former athletes are healthier on average, does the money invested in sports bring returns in form of savings in later health care costs?

Finnish minister for European affairs and foreign trade suggested in Helsingin Sanomat (2012) that private companies could sponsor an individual athlete by taking him or her on their payroll. The matter has been seen as somewhat contradictory, but the real benefits for the company could be studied. A research on how much a company could benefit from investing in an athlete by getting things such as advertising space and air time or if a company benefits if a sponsored athlete gives speeches or does activities otherwise done by someone else would provide information on this matter.

It seems that especially former female athletes are relatively highly educated and well placed in the labor market. Further research on former female athletes' placement on labor market would be informative on whether sports career increases women's chance to be in management position at some point.

Questionnaire

1. What was/is your sport?
   Ice-hockey
   Swimming
   Track and Field

2. What is your highest education level?
   Basic level
   Mid-level
   Bachelor's degree
   Master's degree
   PhD

3. During your career, did you work simultaneously elsewhere?
   Yes
   No

4. Do you feel that the effect of your sports career on later employment was
   Positive
   It had no effect
   Negative

5. Have you been unwillingly unemployed over a period of 6 months after your career
   Yes
   No

6. Compared to peers in your industry, do you estimate your salary to be
   Lower than average
   Around average
   Higher than average

7. Is your monthly income
   Less than 2700 euros
   2700-3566 euros
   3567-4951 euros
   Over 4951 euros

8. Do you have any other comments regarding the effects of your sports career on your later employment?

APPENDIX 2: Finnish average salaries

Average monthly salary of full time employers based on education level, age and gender in 2011.

Gender	Total	Age 10-19	20-29	30-39	40-49	50-59	60-69	X
Genders together								
Monthly salary, €	3111	1846	2504	3130	3299	3221	3231	3053
2 Higher basic level	2607	1845	2329	2769	2754	2673	2594	2814
3 Mid-level	2682	1927	2382	2756	2791	2736	2683	3204
5 Lowest high education	3178	-	2515	3012	3208	3192	3210	3409
6 Bachelor	3303	-	2644	3165	3597	3877	4069	--
7 Master	4329	-	3268	3928	4601	4832	4925	--
8 PhD	5259	-	3591	4301	5189	5743	5962	--
Men	3428	1888	2631	3401	3688	3655	3724	3328
2 Higher basic level	2831	1887	2452	2949	3004	2965	2900	2993
3 Mid-level	2955	--	2539	3010	3114	3097	3056	3834
5 Lowest high education	3746	-	2692	3488	3791	3798	3755	4058
6 Bachelor	3824	-	2889	3593	4255	4441	4484	-
7 Master	4807	-	3434	4327	5195	5362	5440	--
8 PhD	5519	-	3718	4478	5412	6051	6241	--
Women	2808	1795	2356	2809	2947	2882	2834	2538
2 Higher basic level	2286	1795	2065	2314	2361	2363	2309	2394
3 Mid-level	2366	1858	2151	2344	2426	2433	2429	--
5 Lowest high education	2883	-	2324	2690	2909	2907	2904	2551
6 Bachelor	2878	-	2516	2792	3006	3341	3576	--
7 Master	3933	-	3148	3574	4138	4396	4369	--
8 PhD	4898	-	3402	4059	4902	5322	5434	--

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