

# Malmö Youth Sport Study: A longitudinal study of a secondary school in Malmö, Sweden, specializing in physical activity and sports

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This is a presentation of the longitudinal and multidisciplinary research program Malmö Youth Sport Study (MYSS), which is an independent continuation of the Bunkeflo project. The aims, methods, empirical materials and theoretical basis are introduced. The study asks questions related to the role of physical activity and sports to promote an active lifestyle and to foster elite athletes. The longitudinal study involves 156 individuals engaged in thirteen different sports, from a secondary school in Malmö, Sweden, specialized in physical activity and sports.

Two basic questions to be answered are, first, if this school form contributes to a larger extent to foster elite athletes, and, second, if this

school form contributes to pupils taking part in competitive or recreational sports in adulthood to a greater extent than their peers at ordinary schools. The overall aim with the MYSS study is both to answer these two questions empirically, and to investigate which selection factors (gender-related, physiological, social, or psychological) could be used to explain the outcomes. A three year follow-up is analyzed at the present time. There will also be a six year follow-up and a twelve year follow-up.

The researchers represent disciplines within Humanities, Medicine, and Social Sciences, and they are affiliated to three Swedish universities.

## Introduction

Children and youth sport is paradoxical. On the one hand, research shows that sport and physical activity during childhood and adolescence (0-18 years) has important implications for individuals' physical and mental health. Physical activity promotes both physical development and motor development, and prevents illness (Ericsson & Karlsson 2011, 2012). It seems imperative to encourage young people to be physically active during both school and leisure time. On the other hand, research demonstrates that sporting activities offered by schools and sport clubs may have negative consequences. A narrow focus on results and performance may result in exclusion of some children and young people, who consequently become uninterested in sport and physical activity. In addition, sport activities may be socially, psychologically or physiologically harmful for young people.

In the Scandinavian countries, a majority of children participate both in school sports and organized sports. Citizens in these countries are more physically active than citizens in many other countries (Bergsgaard & Norberg 2010). Even so, previous research has demonstrated that PE and organized sport do not necessarily have the expected effects in relation to health and talent identification (Hedenborg & Glaser 2013; Hedenborg & Larneby 2016). A problem that has challenged previous research is why young people choose to drop out of sport in their teens (European Commission 2010). In Norway, one third of active young people drop out of sports between the ages of 13 to 16, and girls more than boys (Seippel 2005). Studies in Denmark have shown that there is a polarization – some become more physically active, others drop out (Pilgaard 2009). A Norwegian study demonstrates that young people are physically active for example in gyms rather than in organized sports (Seippel, Strandby & Sletten 2011). Organized sport has been challenged by new sports and extreme sports too (Engström 2010, Bäckström 2005, Sisjord 2009). In addition, people's participation in sport is guided by their socioeconomic and socio-geographic background (Seippel, Strandby & Sletten 2011) and our choices are influenced by our socialization in relation to social and cultural contexts (Engström 2010).

The drop out frequency is higher in team sports (Seippel 2005). It is explained by the fact that young women choose sports in other arenas where they feel more at home. Another explanation of the drop out is related to time – young people demand flexible training hours (Frydendal Nielsen et al 2011, Seippel 2005). Previous research has indicated the importance of studying patterns of gender relations in order to understand patterns of

physical activity and sport in Sweden (Andreasson 2007, Grahn 2008, Larsson 2001, Ljunggren 1999, Lundquist Wannerberg 2004, Olofsson, 1989, Tolvhed 2008). There are also, of course, many international studies (Anderson 2009, Cahn 2015, Channon et al. 2016, Dworkin & Messner 2002, Fasting 2013, Messner 2002, Pfister 2013 and Wellard 2007). In Norway studies on sport, ethnicity and gender have been conducted as well as research related to sport, sexual harassment and abuse (Fasting, Brackenridge & Kjölberg 2013, Strandbu 1998, Andersson 2005). In the Swedish context, there are many questions in relation to young people's choices that are not yet studied: studies of young people in big cities are few (Hedenborg & Larneby 2016); not much is known about young people's experiences and dreams in relation to intersectionality (there are studies on gender, but few on ethnicity and sexuality). Furthermore, studies of sexual harassment and abuse in sport are missing.

## A secondary school in Malmö, Sweden, specialized in physical activity and sports

In recent years, many secondary schools in Sweden have specialized in physical activity and sports. Such school forms have become popular both among youngsters and local politicians in Sweden. This trend has been both acclaimed and criticized (Eliasson et al. 2012, Ferry & Olofsson 2009, Ferry et al. 2013, Ferry 2014, Lund 2010, 2014, Peterson 2008). The impact of these sports profiles is unclear. We don't know whether these pupils become elite athletes in adulthood.

Although the motives for starting these schools are not always clear, two goals are often mentioned: to foster elite athletes and to promote an active lifestyle. Yet very few of the pupils will become elite athletes. And it is not known whether pupils from this school form will take part in competitive or recreational sports in adulthood to a greater extent than their peers at ordinary schools. Involvement in sport is determined by factors such as gender, socio-economic status, biological age, ethnicity and functionality.

Since 2005 there is also a secondary school with a sport and physical activity profile in Malmö. The first year form contained the Academy for football playing secondary school boys, run by a football club. Next year a second form was added. The third year, girls were admitted. Then other sports gradually were added to the repertoire. Today there are nine classes,

representing football, swimming, diving, tennis, squash, figure skating, badminton, track and field, ice hockey, basketball, floorball and gymnastics.

Two cohorts of boys and girls, and later young men and young women (n=156), are studied in the longitudinal research project Malmö Youth Sport Study (MYSS). The project aims to increase the understanding of how to create an environment that invites children and young people to participation in sport and a lifelong interest in sport and physical activity (a health aspect), and simultaneously leads to successful talent development and identification (an elite aspect). Two basic questions to be answered are, first, if this school form contributes to a larger extent to foster elite athletes, and, second, if this school form contributes to pupils taking part in competitive or recreational sports in adulthood to a greater extent than their peers at ordinary schools. The overall aim with the MYSS study is both to answer these two questions empirically, and to investigate which selection factors (gender-related, physiological, social, or psychological) could be used to explain the outcomes.

Psychological factors are studied with short questionnaires, specifically targeting sports people. They include wellbeing, tensions, friend relations, motivating climate and parent engagement. They are all often used in international studies on sports people (Bengtsson 2012, Ivarsson 2010, Ingrell, Johnson & Ivarsson (2016). Gender related factors are studied with ethnological field work combined with focus group interviews. The aim is to reach a deeper understanding of the reasons for girls and boys continuing or quitting their sport engagement. The researcher studies the pupils in school using the technique of participant observation. Each interview normally involves four to five girls or boys, but some pupils are interviewed individually on request (Larneby 2016; Larneby, forthcoming thesis). The physiological measures are almost the same as the ones made in the Bunkeflo project.

Social factors are illustrated by questionnaires answered by the pupils and their parents. These questionnaires resemble those used in *The Decisive Years* (see presentation further on in the text). Based on a theoretical understanding of different aims linked to voluntary sport in sport clubs and in school sports, using a dichotomy of democratic versus competition fostering, the pupils are studied over time, using sociological factors including social class, gender, ethnicity, sport capital and relative age (the parents), as well as being asked questions about their sport practices (pupils only).

The pupils answered the questionnaires in school, their parents answered them at a parents meeting. The physiological measurement was conducted in Clinical Physiology, Diagnostic Centre, Skåne University Hospital.

Each visit took about four hours. Baseline data and data for a three years follow-up has been collected, and is now under analysis. Ethical permission for the entire MYSS project is in place. There will be additional follow-ups in grade 12 (aged 19) and at the age of 25, which represents a hypothetical average top sport result level. This is also an age when the hypothesis of the intervention group keeping a higher level of physical activity than their peers can be more reliably tested.

Four control groups have been defined for comparative analyses. The first includes pupils that also applied to the Sports School, but were not admitted (n=437). This group is regarded as the one that resembles the intervention group the most. The second control group includes girls and boys in the sport clubs where pupils from the school are members. All 53 sport clubs had at least one member that attended the school. Twelve of these are missing in this group, because they declined or they had no suitable members other than those who attend the school. In 42 clubs, there were 992 members born in the two cohorts, 156 attending the school and 836 that did not.

The third control group includes all girls and boys born the relevant years in a certain city district in Malmö, statistically similar to the whole city (n=286). The fourth control group includes all girls and boys born in Malmö the relevant years (n=6255). Comparison group three and four will be more relevant for answering the second main question (levels of physical activity) because they probably contain about 30–40% individuals that were not members of sport clubs at the age of thirteen. Comparisons will be made both within the intervention group and between this group and three control groups.

Since 2012, researchers from Halmstad University (Ann Bremander, Urban Johnson, Charlotte Olsson), Lund University (Eva Ageberg, Magnus Dencker, Staffan Ek, Magnus Karlsson, Ola Thorsson, Per Wollmer) and Malmö University (Susanna Hedenborg, Joakim Ingrell, Marie Larneby och Tomas Peterson) are engaged in the project. The researchers represent different disciplines and different approaches to the questions posed. The project is a continuation and development of the “Bunkeflo project”, which for nine years examined the relationship between children’s health and academic achievement on the one hand, and engagement in sport and physical activity at school on the other. Unlike the Bunkeflo project, MYSS is based on studies of relative age effects (RAE) in sports, conducted by Tomas Peterson at Malmö University.

## The Bunkeflo Project

In the Bunkeflo project, the long-term effects of increased physical education on motor skills and school performance were examined. All pupils from a selected school born between 1990 and 1992 were included in a longitudinal study stretching over nine years. The intervention group (n=129) had daily PE and, if necessary, one additional lesson of adapted motor training. The control group (n=91) had two PE classes weekly. An important result was that daily PE and adapted motor skills training during the compulsory school years is a feasible way to improve motor skills, school performance and the proportion of pupils who qualify for upper secondary school (Ericsson & Karlsson 2011, 2012).

The marks achieved by the boys in the intervention and control groups respectively differed more than those achieved by the girls in the respective groups. Girls included in the intervention, however, seemed to respond better than boys to the physiological tests (Ericsson & Karlsson 2012). Similar questions will be answered within MYSS (Ingrell, Larneby, Hedenborg). The purpose is to obtain a deeper understanding of reasons for girls' and boys' continuation in, or withdrawal from sport. The children are observed in school, both in PE lessons and in their specific sports lessons. A large number of articles and dissertations has been produced from the Bunkeflo project. There are, however, questions connected to the outcome: can the same effects be seen in another selection of pupils, as Bunkeflo is a relatively wealthy part of Malmö? The studied group in MYSS comes both from Malmö and from a wider area of Southern Sweden.

## The Decisive Years

The aim of The Decisive Years was to study children and youth sport as an arena for socialization: how football playing girls and boys grow and change, psychically, psychologically and socially, how group dynamics in training and competition develop responsibility and initiatives (Peterson & Norberg 2008b, Peterson 2011, 2013). Furthermore, questions are asked about how adults as leaders acts and the consequences thereof; who drops out and who continues and who became successful; which ambitions, dreams and skills the children have and continue to develop. The central questions are placed on two levels – the more general importance of sport in the socialization process and the specific questions of sport practice. Theoretically, based on

the dichotomous concepts of democratic fostering and competition fostering, different aims linked to voluntary sports in sport clubs and in school sports are analyzed.

One of the outcomes of the way both school sports and voluntary sports are organized is the unintended use of differences in physical maturity. The Relative Age Effect is by now a widely recognized consequence of selection systems within competitive children and youth sports all over the world (Cobley et al 2009). In The Decisive Years study, RAE was documented on all levels of the selection systems (Peterson 2011). RAE was also found in the intervention group in MYSS (Saether, Peterson & Matin, submitted).

## The disciplinary studies

The interdisciplinary work is based on a number of studies representing medicine, social sciences and humanities. The challenge is not just to add knowledge from the different studies within different disciplines to each other, but to actually analyze and discuss variables like “weak knees” and “parents with sport capital” as opposed, or perhaps as interacting, explanations to success or failure, and to continuing interest in physical activity. These are the disciplinary studies, either planned or under prosecution.

### *Muscle function in terms of movement quality of the knee (Ageberg)*

The aim is to assess whether poor movement quality of the knee, in terms of increased knee abduction (also called dynamic knee valgus), during weight-bearing activities, such as jump tasks, is associated with future pain/injury, i.e., negative effect on sport participation and success in sport. The athletes are video filmed during the performance of a test battery including five weight-bearing functional tasks resembling daily and sports activities, and their knee abduction angle is visually observed and scored on a scale from 0 (best) to 2 (worst). They are followed over time with the same test battery and with a valid questionnaire to register any overuse or acute injury. This data will provide more insight into how knee movement quality affects young athletes and their ability to train and compete while remaining healthy.

*Perceived pain, health and physiological performance in adolescents enrolled in schools with a sports profile (Olsson, Bremander)*

The aim is to investigate the relationship between sports involvement and performance, perceived health and pain, and how this influences their future success in sports, physical activity level, perceived pain and health. A secondary aim is to study how biological age influences sports involvement, physical activity levels and the decision concerning future sport participation. Validated questionnaires evaluate health-related quality of life and perceived pain once a year. Three age cohorts of 7th grade students were asked to participate in the study (n=179), in the final sample there were 153 participants. Physiological performance are measured once a year and include sprint, agility and power. Biological age is assessed twice a year using height, sitting height, and leg length until the age of 16. The first studies are already conducted and the measurement will be continued until 2025.

*Gender and Physical Activity (Karlsson)*

The aim is to examine gender and how gender-specific physical activity improves bone strength and muscle function at growth, since boys and girls respond differently to exercise. The evaluation is targeted against young adulthood, thus making it possible to determine if exercise improves peak values in young adulthood. This is of importance since 50% of bone mass in old age is determined by young values. The study includes evaluations of skeletal, soft tissue and muscle function by dual energy X ray absorptiometry (DXAA) and peripheral computed tomography (pQCT) techniques (DXA baseline n=146, DXA three years follow-up n=120). All techniques are in use in our laboratory and we have successfully conducted similar studies for 20 years. The first studies are already conducted and the measurement will be continued until 2025.

*MYSS Physiology (Wollmer, Dencker, Thorson)*

In this study, a range of physiological measurements is performed, including measurement of aerobic fitness, muscle strength, cardiac examination by echocardiography, physical activity by accelerometry and pulmonary function measurements. Furthermore, body composition is measured by dual X-ray absorptiometry. These examinations, all made with state of the art

methods, provide comprehensive characteristics of the children's physical development and abilities at the different time points studied. By virtue of the longitudinal design of the study, we will be able to determine the role of early physical development for success in sports (DXA baseline n=146, DXA three years follow-up n=120). More important, however, the relative role of physical abilities in relation to psychological and social factors for success in sports can be elucidated. To our knowledge, this is a unique facet of the study. The first studies are already conducted and the measurement will be continued until 2025.

### *A Sport Psychology Perspective on Achievement Motivation in School Sports (Ingrell, Johnson)*

This PhD-project examines adolescents' achievement goals, perception of motivational climate, behaviors, cognitions and effects regarding sport participation in one of the cohorts (n=78). In addition, the study investigates changes over time and whether there are differences between students at the school and the students who attend regular elementary schools (baseline and five follow-ups, n=99%, 99%, 94%, 91%, 79% and 73%). The study has a longitudinal and a predominately quantitative design. Theories of achievement motivation and constructs of burn-out are used. The PhD-project started 2013 and data collection was concluded in 2016.

### *Gender positions in School Sport (Larneby, Hedenborg)*

By means of ethnographic fieldwork, combined with focus group interviews, gender structures are studied in one of the cohorts (n=78). The purpose is to obtain a deeper understanding of reasons for girls' and boys' continuation or withdrawal from sport. Ethnographic fieldwork is based on participant observation, in this case following the children in their everyday life and their sport in school. In total, 200 hours of observation is documented in a diary of field notes (570 pages), focusing the lessons of football, tennis, floorball and PE. The interviews could be either group interviews or individual interviews, depending on the wishes of the children. All but one interview were conducted with girls and boys separated. 13 interviews with 29 pupils are conducted. In addition, seven members of the staff were individually interviewed (the principal, coaches and PE-teachers) in order to complement the observations of and interviews with the pupils and to get a more nuanced

and wider depiction of the school. The PhD-project started in 2013 and will be concluded in 2018.

*Sociological and political perspective on how to foster elite athletes and to promote an active lifestyle (Peterson)*

Baseline data for the sociological study includes two questionnaires. The first one is for the pupils, asking questions about their participation in sport and about socialization factors relate to sport participation (n=151). The second questionnaire is for the parents, asking questions about background variables such as gender, occupation, education, living conditions, ethnicity, questions about sport participation for themselves and their children, and normative questions regarding their children's sport participation (n=153). Theoretically the concepts of democratic fostering and competition fostering is used. Within the study, the political implications of a development in which the state's public health goals unite or collide with the sporting establishment's interest in a successful elite program will be discussed.

## Plan for the multidisciplinary collaboration

All empirical material – sociological as well as physiological, psychological and gender-based – will be used. The point of departure will be the disciplinary studies. A step-by-step strategy for analyzing the entire material, based on a comparison between baseline data and the three years follow-up is being developed by the whole research group. Comparisons will be done both within the intervention group and between the intervention group and the control groups. We also know that there are differences between the cohorts in a number of respects. RAE is differently pronounced between the cohorts, and the characterization of the talent capacity of the children in different sports vary (for example “the XX cohort is comparatively stronger than the XY cohort in our sport”). These differences will eventually enrich the understanding of the whole intervention group, but at the same time it is not meaningful to analyze each cohort separately.

For MYSS the major scientific task will begin when the disciplinary studies have been conducted. The starting point for the multidisciplinary discussion will be variables that actually are commensurable in Kuhns' sense, that is, variables that have both a physical and social definition and mean-

ing (Kuhn 1962, Loland 2008). Three such variables are Gender, RAE and Achieved set goals for elite effort. They will be analysed in relation to the psychological material, the gender based material, the physiological and orthopedical material, and the socioeconomic variables in the parental questionnaire.

## Relative Age Effect

RAE is by now a recognized effect of selection systems within competitive children and youth sports in countries all over the world (Cobley et al 2009). Physical maturity is a physical attribute. In selection systems that are socially constructed, differences in physical maturity are used as a central means to decide who will be chosen and who will not. In a study including all children born 1984 within the Swedish Football Association, the Relative Age Effect was documented on all levels of the selection systems (Peterson 2013). Even the selection of players who had been rejected by the selection system, but still became elite players, was influenced by Relative Age Effects.

For the intervention group a characteristic RAE is documented. Date of birth for the intervention group and the fourth comparison group (all children born in Malmö) is collected. Staffan Ek, PhD-student at Lund University, is currently working with all physiological variables, relating the results to relative age. Saether et al. are conducting a study on RAE among sport school pupils, a sociological comparison between Norway and Sweden (Saether, Peterson & Matin, submitted).

## Gender

All sport contexts except football are sex integrated. Among the studied floorball players, the mixed sex group resulted in boys acknowledging girls as better players than anticipated, and girls experienced that they improved while playing with boys. Simultaneously, the girls had to adapt to a masculine norm and a “boys’ way to play” to be accepted by their male peers (Larneby 2016). Preliminary results show that the overall gender patterns at the studied school are prevalent notions regarding boys being better than girls, especially in team sports and in PE. Mainly, this has three consequences: first, girls in general are subordinated and patronized by many

boys and have to fight for recognition as worthy athletes; second, this leads to some girls losing motivation for their sport and drop out, while other girls are empowered since they manage to adapt to sports' male and masculine agenda; third, many of the boys start questioning the normalized separation of boys and girls in training and successively acknowledges girls throughout the years at school, but most boys reinforce the notion that separation still is optimal due to biological differences (Larneby, forthcoming thesis). Boys and girls are all affected by Relative Age Effects, although in different ways (Peterson 2011). RAE studies have however mostly concentrated on boys' sports, and there is a general recommendation among the researchers that more studies should be done on girls' sports. As in the multidisciplinary work, in the sociological study gender is one of the basic variables being studied.

## Achieved set goals for elite effort

The two basic questions to be answered in MYSS are if this school form contributes to a larger extent to foster elite athletes, and if this school form contributes to pupils taking part in competitive or recreational sports in adulthood to a greater extent than their peers at ordinary schools. In the three years follow-up, we test only the first question. To "achieve set goals for elite effort" means that you have accomplished what you set up to do in terms of sport when you started your education. The pupils were accepted on the basis of a favorable prognosis. Their trainers and/or representatives of their district organizations were interviewed three times during May 2015 – March 2017. The last term the pupils were separated on the basis of two variables. The first one (GRAD) is about (a) graduating from school and having succeeded in sport, (b) graduating from school but having terminated your sport effort, (c) having succeeded in sport but not graduated from school, (d) not graduated and terminated your sport effort. These four alternatives are all empirically visible and normatively neutral. Every individual belongs to one of the four groups.

If the elite argument is to be credible, the individuals should both have graduated from school and succeeded in sport. If they did not graduate, dropped out of sport or both, the argument would not be valid. Obviously, it is too early to definitively dismiss the possibility of a future elite sport career at the age of 15 or 16. But if some of them succeed you could hardly say that it was because of the school, but rather in spite of it. If you have terminated

your sport effort, it means that if you are a football player, you have stopped playing football in your club. But normally you continue to go to the sport school. Otherwise it is often a case of your family having moved to another place. But then you do not have to have terminated your sport effort.

The second one (ACHIEVE) separates the pupils into a dropout group, a group not achieving set goals, a group performing at a district level, and one group performing on a national/international level. If you did not achieve set goals, and is a football player, you still play football, but not, for example, in a first division club. You just had to leave for another club. Or you have failed to make it to the district level in your sport. Three out of four alternatives are empirically visible and normatively neutral. The second group (did not achieve set goals) is, however, built on subjective assessments. When it comes to these assessments, the sports differ considerably. On the other hand, the objective answers will appear, eventually.

If the sport school to a larger extent contributes to foster elite athletes, those individuals would have to be in the group performing on a national/international level. Performing at a district level must be perceived as a disappointment. Once again it is too early to definitively dismiss the possibility of a future elite sport career at the age of 15 or 16. But to perform at a district level you hardly have to choose a sports school.

In all, by using the two variables, different groupings can be conducted for the analysis. One is to use all four. Another tentative suggestion is three groups: one “drop-out group”, one “average group” and one “elite group”. You could also analyze the dropout group compared to the rest, or the national/international elite group compared to the rest. The groups will then be compared on the basis of all the empirical material. We will use all four groups, i. e. the dropout group, the group not achieving set goals, the group performing at a district level, and the group performing on a national/international level .

## The Parental Questionnaire

The background factors that social science argues to be most relevant for dividing citizens into different groups, where these groups are effected by society in different ways and with different intensity, are age, gender, social class (based on educational level and occupation), ethnicity, housing conditions and geographical position (Engström 1999, Schelin 1985). The parental survey contains questions on all these factors, as well as a number

of questions on sport capital and the sport habitus and habits of the family (Bourdieu 1988, Engström 2010). The questionnaire was answered by the parents of 153 out of 156 pupils. The multidisciplinary analysis of the three years follow-up will be conducted in 2017 and 2018.

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