

Enoksen, E. (2011). Drop-out rate and drop-out reasons among promising Norwegian track and field athletes. *Scandinavian sport studies forum*, 2, 19-43

Drop-out Rate and Drop-out Reasons Among Promising Norwegian Track and Field Athletes

A 25 Year Study

Dr. Eystein Enoksen

Norwegian School of Sport Sciences
<eystein.enoksen@nih.no>

Abstract

The aim of the present study was to identify the total drop-out rate and drop-out reasons for a group of promising track and field athletes. 202 males and 98 females, aged 16 ± 2 years, took part in this study. Questionnaires were administrated in 1975, 1983, and 1989. In-depth interviews were conducted in 1989 and in 2000. A chi-square test was administrated to test the difference between males and females dropping out and to test the most significant reasons influencing the athletes' decision to drop out of their competitive track and field activities. The drop-out rate was highest when the athletes were 17 years old. The results showed that females were clearly dropping out at a higher rate than males ($p < 0.05$). In contrast to the most common drop-out reasons mentioned in the research literature, this study showed that the frequency of injuries, stagnation in performance, educational demands, and a lack of motivation were highly notable reasons for why relatively many talented track and field athletes dropped out at an early age. The influence of social factors, participation in other sports, demanding work situations, military services, and marriage and family were also reasons for some athletes dropping out. Various drop-out reasons were important over the life of the study, and differed at the different stages.

Key words: talents, competitive sports, withdrawal, sports career

Introduction

Over the years, the development of performance in elite youth sport has required increasingly more strenuous workouts, early specialization, careful planning, and the ability to handle tough competitions (Gambetta, 1989; American Academy, 2000; Wiersma, 2000; Baker, 2003). The path to success in sport is often referred to as the “10-year rule of attainment” (Ericsson et al., 1993). Combined with handling the necessities of education, work, and other interests, this demanding situation applies more pressure on the young athlete—physical, psychological, and social (Augustini and Trabal, 1995; Mchale et al., 2005; Cervello et al., 2007). In many sports those requirements have led to the early dropout of many young talented boys and girls (Petlichkoff, 1992; Sarrazin et al., 2002; Molinero et al., 2006). The aim of this study is to establish a deeper and more comprehensive understanding of the drop-out problem among promising track and field athletes. This information is of vital importance in the planning of an optimal learning and training process for young athletes aspiring to elite status in the future.

Drop-out reasons in sport

According to Swain (1991), withdrawal from competitive sports can only be understood as a complex and multifactor process—a process that begins soon after the athletes become engaged in their athletic careers. Sijord (1993) also claims that the early drop-out rate in competitive youth sports has to be considered as a natural trial-and-error process. Gould (1987) mentioned two categories of dropouts, self controlled (internal) and externally controlled. He emphasized that some athletes decide to withdraw from competitive sports participation willingly, while others do not have any choice. Klint and Weiss (1986) have classified three different groups of competitive sports dropouts: (1) the reluctant dropouts, who are forced to quit competitive sports because of serious illness/injury or an overwhelming athletic program; (2) the voluntary dropouts, who want to engage in other interests and activities; and (3) the resistant dropouts, who consider the costs of participation in competitive sport to be greater than the benefits of being involved. A review of the research literature focusing on the early drop-out rate of young talents in sports explains the dropping out as a result of many singular causes. The most

important reasons mentioned in the different studies are summarized in the following categories:

(1) Training and performance factors: The early drop-out among young promising athletes in sport is often related to a stagnation in athletic performance and the occurrence of serious injuries (Stork, 1984; Kröger, 1986; Bussmann, 1995). A typical reason for dropping out among talented athletes is that the training programs are too focused on early specialization (Baker, 2003; Baker, Cote, & Abernethy, 2007). Furthermore, many coaches' emphasis on overly rigorous training and tough competitions, almost entirely neglecting social aspects (Abraham, 1986; Augustini & Traubal, 1995; Molinero et al., 2006).

(2) Education and work obligations: Educational requirements and work obligations on one hand, and the pursuit of an athletic career on the other hand, can cause conflicts between priorities of time regarding sport activities and school work for many athletes. Several studies have focused on the lack of time and coordination of time as a typical reason for dropout within competitive sport (Lippe, 1976; Kreim & Mayer, 1985; Enoksen, 2002).

(3) Motivational aspects: The research literature on motivational aspects indicate that young promising athletes will continue in a sport as long as they achieve new goals, show signs of improvement, and regularly win in competition (Ames, 1992). Athletes with a negative performance development in sport will experience lower self-esteem, poorer estimation of potential success and lack of motivation (Gabler, 1981; Butcher, 2002). Research also shows that athletes who dropped out of sports at an early age expose more stress and anxiety in training and competition situations, compared to those who continue (Sarrazin et al., 2002). Some studies also show that poor training facilities may influence the athletes' decision to drop-out from sport (Gabler, 1981; Bussmann, 1995).

(4) The social environment: According to Carlson (1991), a social and stimulating training climate with good relationships to friends, parents and competent coaches may have a positive impact on the choices that athletes might make. Research shows however that a negative social environment (Robinson et al., 1982; Brown, 1985; Sisjord, 1993) and unsatisfactory support from important individuals (Patriksson, 1981, 1987; Ommundsen, 1997; Ferreira, 2002) often lead to an early quitting from sport. A demanding work or family situation, combined with social immobility, can also have a decisive effect on the athlete's choice to continue an athletic career or not (Jonsson, 1983; Stork, 1984).

(5) Choice of other sport activities and interests: Many young talented athletes can experience a strong conflict of interest in today's elite sport when it comes to prioritizing a special sport (Næsje, 1985). The wish to give priority to other activities and interests (Brown, 1985; Klint & Weiss, 1986; Sisjord, 1993) and the desire to spend more time with friends (Patriksson, 1987, 1994) are marked reasons why many younger athletes choose to drop-out of a special sport.

Drop-out reasons in track and field

The research literature shows that the drop-out rate among young promising athletes in track and field is quite high (Ek, 1977; Jarver, 1979; Enoksen, 2002). Ek found that 90% of the girls and 75% of the boys among young elite Swedish track and field athletes dropped out within five years of beginning the program (1972-1977). In a select group of young Finnish track and field athletes ($n=90$), who began specialized training at the age of 11 to 13 years, only one athlete reached the top national level 10 years later (Jarver, 1979). Enoksen (2002) found that talented female track and field athletes were clearly dropping out at a higher rate than males and that the drop-out rate was highest when the athletes were 17 years old.

The most typical reason for dropping out among young promising track and field athletes is that the training programs are too focused on early specialization (Feige, 1979; Vorobjev, 1994; Baker, 2003). A longitudinal study ($n=80$) performed by Vorobjev (1994) indicated that the drop-out rate and injuries was greater among the track and field athletes who followed a specialized training program than among the athletes following a more general training regime before specialization. Lippe (1976) found that the drop-out rate among girls ($n=381$) who competed in the Norwegian track and field games for youths (Tyrving Games) was highest when the girls were 16 years old. The two main reasons for dropping out were injuries (25%) and demanding school or work obligations (14.6%). Næsje (1985) found that 82.2% of former Norwegian track and field champions for the 12–13-year age group (Donald Duck Games) had dropped out of track and field competition after 10 years. The most often stated reasons for their withdrawal were; (1) starting to compete in another sport; (2) a lack of athletic progress; (3) aspects relating to motivation; and (4) priorities concerning time and regarding other interests and school work. Bussmann (1995) identified some stress factors in

a group of talented young female track and field athletes, which caused them to decide to stop competing. The athletes mentioned professional strains, negative personal experiences, a change in interests, a lack of support from important individuals, and a negative social environment as the most important factors influencing their dropping out.

In many of the refereed studies listed above, emphasizing one single dropout reason as the most important was a problematic task. In addition, it may be difficult to draw comparisons between the results, because variables like age, sex, skill level, and sport context are not equivalent. Annual age-grouping is an organizational strategy in competitive sports. According to Cobley et al. (2009), this strategy promotes relative age effects (RAEs), referring to the chronological age, compared to differences in physical, psychological and sociological developmental parameters in annual competitive age groups. In a review article, Cobley et al. (2009), represents a meta-analytical study of RAEs based on data from previous research, which attempts to determine the overall prevalence and strength of RAEs in sports. The findings indicate that sports are less likely to be a career pathway for younger athletes whose birthdates coincide with the last three months of an annual age group (Helsen et al., 1998). Thus, the relative age effects may influence the athletes' maturation, participation and attainment in competitive sports (Barnsley & Thompson, 1988; Sherar et al., 2007). In addition, analyses of age category, skill level and sport context involving adolescent (aged 15 to 18 years) males at the national level in highly popular sports appear most at risk to RAE inequalities (Cobley et al., 2009). Helsen et al., (1998) and Barnsley & Thompson (1988) reported higher drop-out rates in relatively young ice hockey players of junior high and adolescent ages.

The documentation of drop-out reasons from sports participation has mainly been based on quantitative surveys. Few studies, however, have been performed with a longitudinal and qualitative perspective trying to identify factors dissuading the pursuit of an athletic career. The present study is intended to examine the drop-out rate and to identify the most important reasons for dropping out among young talented track and field athletes ($n=300$) over a period of 25 years (1975-2000), combining a quantitative and qualitative approach. Longitudinal designs have been requested in relation to the dropout dilemma in youth sports (Roberts & Treasure, 1996). Studies that gather information over a longer period are supposed to give a more realistic picture in identifying factors contributing to the athletes' dropping out from sport. Weiss & Petlichkoff (1989)

also underline the importance of generating more qualitative research to get a better understanding of the contextual factors (internal and external factors) influencing the drop-out phenomenon in different sports.

Materials and methods

Participants

320 young talented Norwegian track and field athletes, aged 16 ± 2 years, were invited to participate in this study. Of the 320 participants, 300 (202 males and 98 females) accepted and took part. Almost all of the participants were students (95.7%), with 46.3% in secondary school, and 39.7% in high school. The participants were defined as potential elite athletes who were involved in a training program that was oriented towards the development of national-calibre performers. The participants were ranked statistically among the top 10 in 10 different track and field events (Norwegian Amateur Athletic Association, 1975). One of the reasons why females are underrepresented in this population is due to the fact that females were not allowed to compete in hammer throw, triple jump, pole vault, steeplechase and long-distance running at that time. The participants competed in the following disciplines: sprinting and hurdling ($n = 62$), middle- and long-distance running ($n = 75$), jumping events ($n = 84$), and throwing events ($n = 79$). Furthermore, the participants were classified into five performance levels, based on their best athletic results according to the Norwegian Amateur Athletic Association scoring Table (1974): Level I > 1100 points ($n = 59$), Level II > 1050 points ($n = 54$), Level III > 1000 points ($n = 67$), Level IV > 950 points ($n = 63$), and Level V > 900 points ($n = 57$).

Instruments

QUESTIONNAIRE

In the 1975 study, the participants had to answer a questionnaire assessed by 40 questions focusing on 1) personal characteristics, 2) history of athletic involvement, and 3) whether or not the chosen participants would like to take a part in the study. The ratings were made on a modified five-point Likert-type scale ranging from very much (extremely important influence) to very little (minimal or no influence) (Kvale, 1996). The questions were designed with a mixture of open and closed answer alter-

natives. The information collected through the 1975 questionnaire was of great importance for starting the present study. The follow-up questionnaire, which was used in the 1983 and the 1989 studies, was designed with open answer alternatives focusing on the talented athletes' first competition years in track and field, in order to identify factors dissuading the pursuit of an elite athletic career. The main purpose of the questionnaires developed for the 1983 and the 1989 studies was to get more information on the following main topics: 1) drop-out rate, 2) reasons for dropping out from sports, 3) how many had continued their athletic career, and 4) the motivation for their continuing. The participants were asked to rank the most important reasons why they chose to drop out from track and field competition.

INTERVIEW

In the 1989 study, an orientational qualitative-inquiry approach was used (Kvale, 1996), and an interview guide was developed within this theoretical perspective. The empirical data were collected through interviews with audio recordings dealing with areas that had influenced the development of an athletic career and factors that had influenced the drop-out rate and dropping-out reasons in elite track and field. In the year 2000, open-ended, in-depth interviews were carried out with participants who had continued their competitive careers in track and field. The interviews were aimed at evoking the participants' reflections on their experiences to gain a deeper understanding of the reasons for exiting competitive track and field athletics. The athletes were asked to reflect upon identical questions to avoid interviewer biases (Kvale, 1996). The following main questions were used in the interviews with the athletes and additional follow-up questions were used if necessary:

1. How would you describe your athletic development?
2. Did you manage to combine your educational and athletic career?
3. When did you stop competing in track and field?
4. Why did you choose to drop out of track and field competition?
5. How would you characterize your relationship with your coach?
6. How would you characterize your training environment?
7. What was your motivation for continuing your athletic career?

Procedure

The questionnaires designed in 1975 were sent, together with informed consent and local ethics committee approval, in September 1975 to 320 participants. The questionnaires designed for the 1983 study and the 1989 study were administered in November 1983 and October 1989, respectively. All questionnaires were administered in written form. The participants who did not respond to the first request were sent a new questionnaire two months later, and those who did not answer the second questionnaire were again sent a new and final questionnaire two months after the second had been sent. Those who did not answer after the third trial were considered to have dropped out. In 1989, 10 athletes were chosen for interviews. In 2000, 24 athletes who had continued their athletic career after 1989 were interviewed. The interviews were conducted between September 1989 and October 1989 for the 1989 study, and from February 2000 to November 2000 for the 2000 study. All interviews were conducted at the Norwegian University of Sport and Physical Education on an individual basis. The interviews varied in time from 60 to 120 minutes. Combining the analysis of the quantitative data and qualitative data was to bring forward more refined and valid information about the variables involved in the processes of dropping out from competitive sports at an early age.

Data analyses

All interviews were transcribed, and the unstructured qualitative data were coded and categorized according to the main items of the different studies and based on the procedures and techniques of Grounded Theory (Strauss & Corbin, 1990). The inductive analyzing process should result in a meaningful grouping of the interview data. First, data were delimited and grouped into different categories; second, the qualitative similarities and differences were analyzed, and, third, the major categories of descriptions and a number of subcategories were formed to elucidate collected data about the main reasons for dropping out of competitive sports. The validity of the data is shown through the systematic and detailed descriptions, the process of analysis, and the results (ibid). The quantitative data from the questionnaires collected in 1975, 1983, and 1989 were coded according to the chosen categories. The punching and statistical analysis of the data were carried out using the Statistical Package for Social Science (SPSS) at the faculty for social sciences at Blindern University in Oslo. The quantitative data were prepared for presentation.

A chi-square test was administered to test if there was a difference between the rate of males and females dropping out in the different phases of the study, and to test the most significant reasons influencing the athletes' decision to drop out of competitive track and field sports.

Results

The results show that the response rate on the questionnaires was quite high, both in the 1975 and the 1983 studies, for both male and female athletes (Table 1).

Table 1 *The response rate on the questionnaires in the different stages of the study for male and female.*

Year	Male	Female	Total
1975	67.3% (n=202)	32.7% (n=98)	83.3% (n=300)
1983	56.7% (n=170)	28.7% (n=86)	85.3% (n=256)
1989	48.0% (n=123)	21.9% (n=56)	69.9% (n=179)
2000	100.0% (n=20)	100.0% (n=4)	100.0% (n=24)

*P = < 0.05

The results indicate specifically that the drop-out rate was high amongst males in all the study phases. Males had an overall drop-out rate of 61.2%, compared to 38.8% for females in 1983; 73.6% in 1989 compared to 26.4% for women, and 85% compared to 15% for women in 2000 (Table 2). The results also show that 51.5% of the male participants dropped out in 1983, 79.6% in 1989, and 85% in 2000 (Table 2). Furthermore, 67.3%, 87.5%, and 75% of the female participants dropped out in years 1983, 1989, and 2000, respectively (Table 2). The results show that the highest drop-out rate corresponded to athletes who were 17 years old.

Table 2 *The dropout rate in the different stages of the study between and within male and female.*

Year	Between group			Within group		
	Male	Female	Total	Male	Female	Total
1983	104 (61.2%)	66 (38.8%)	170 (100%)	51.5% (n=104)	67.3% (n=66)*	56.6% of n=300
1989	78 (73.6%)	28 (26.4%)	106 (100%)	79.6% (n=78)	87.5% (n=28)*	81.5% of n=130
2000	17 (85.0%)	3 (15.0%)	20 (100%)	85.0% (n=17)	75.0% (n=3)	83.3% of n=24

In this investigation, however, 12.1% of the young athletes dropped out in 1977 and 11.3% in 1978. In 1977, 16.3% of the girls stopped competing in track and field. The dropout rate increased over time, and from phase to phase, and it was higher among females than among males.

The three most commonly mentioned reasons for dropping out of track and field throughout the longitudinal study were injuries (24.3%), school priority (21.4%), and lack of motivation (20.7%). The drop-out rate was highest among male participants for all drop-out reasons mentioned (Table 3).

Table 3 *The dropout reasons as reported by the track and field athletes who dropped out from competition.*

Dropout Reasons	1983		1989		TOTAL	
	N	%	N	%	N	%
Injuries	40	14.5*	27	9.8*	67	24.3
School priority	38	13.8*	21	7.6*	59	21.4
Lack of motivation	32	11.6*	25	9.1*	57	20.7
Social factors	16	5.8	8	2.9	24	8.7
Other sports	9	3.3	5	1.8	14	5.1
Work	6	2.2	5	1.8	11	4.0
Other reasons	29	10.5	15	5.4	44	15.9
Total	170	61.6	106	38.4	276	100.0

*P = < 0.05

The drop-out reasons were further explicitly stated by several of the interviewees. One athlete (Informant A) in the 1989 study described the following:

It was an acute injury that forced me to quit. I got a prolapse in my back during take-off practice in high jump. In addition, I had some problems in the neck, so I thought the risks were higher than the benefits and I did not dare to continue. If it was not for this serious injury, I would for sure have continued my athletic career. The injury was a plain accident. I managed to rehabilitate quite quickly, but in the long run it was too risky...

The athlete also claimed that "The medical staff did not help me to treat the injury and I had to administer all by myself...".

There was some variability in how the athletes responded. One athlete in the 2000 study (Informant B) claimed that:

I can remember two injuries that gave me problems. The first was plantar fascia tendonitis and the second was a knee injury. The injuries were a result of too much and too hard training with high intensity and spikes on the track. There was always a risk of getting injured...

The athlete also highlighted the importance of medical support and treatment of injury:

I was lucky to get professional help to handle my injury problems. In my club there were both a doctor and a physiotherapist at our disposal, which helped me continuing my athletic career...

A female long-distance runner in the 2000 study (Informant C) expressed frustration because a serious injury had destroyed her possibilities of succeeding in an international competition:

Injuries have been a problem lately. Perhaps I have to start analyzing why my foot is giving me so much pain. Maybe there is a reason for it. In 1987 it was quite brutal and in 1988 I had to quit the finals in the Olympics games...

The time needed to complete the planned training and to achieve a good performance in competitions often comes in a more-or-less incidental and conflicting antagonism to the time school, work, and other hobbies require. This was a reason why many athletes chose to stop competing in track and field (Table 3). A typical response (Informant D) in the 1989 study was:

Because of stagnation in performance, I started to consider the costs and benefits of my efforts trying to make progress in the track and field events. After some considerations I decided to use more of my time on my schoolwork, hobbies and friends...

One of the talented high jumpers in the 2000 study (Informant E) expressed difficulties with the mental-focus-on-results progression:

When I had managed to jump 2.13...I could jump 2.10 easily, having done over 50 competitions jumping over 2.10. My best result was 2.13, and I was very close to jump 2.16, 2.17 and 2.18, but it seems like a mental block prevented me from breaking through...and de-motivated me from continuing...

Social factors in the training environment and the relationship with coaches can be of importance, whether an athlete chooses to pursue a sport career or not (Table 3). Informant F in the 1989 study said:

It was a problem having my coach living in another city. I had to travel a lot and the contact over time was too seldom....If somebody had told me that I had a great potential, I believe I could have performed on a much higher level, but nobody told me so I became de-motivated and quit competing...

When it comes to performing in sports it is always a question of choosing the right sport. In this study, some of the athletes quit track and field and gave priority to different sports, including ball games and cross-country skiing. This was explicitly stated by several of the interview informants: Informant G stated: "I discovered that I had a natural talent in cross-country skiing..." Informant H said: "I was convinced by my friends to take up basketball..." And Informant I stated: "The training environment at my home place was dominated by soccer – so I was challenged to play together with my friends..."

Discussion

The response rate

The response rate throughout the longitudinal study (1975-2000) was relatively high (Table 1). In the 1975 study, 300 of the 320 young track and field athletes answered the questionnaire and accepted the offer to take part in this study. In the 1983 study, the 300 participants received a new questionnaire. The response rate was 56.7% (n = 170) and 28.7% (n = 86) for males and females, respectively. The participants in the 1983 study were between 22 and 26 years old. This is considered to be an optimal period for training and performance and a very critical period for an athlete's future involvement in track and field sports (Gambetta, 1990, Bussmann, 1995; Enoksen, 2002). According to the findings in Cobley et al.'s (2009) review article, the rate-of-age effects (RAEs) are most likely to occur in highly popular sports like track and field. The RAEs are primarily associated with physical maturation and the selection of athletes within the talent developmental strategies of the sport (Barnsley & Thompson, 1988; Sherar et al., 2007). The sociocultural influences attempting to enhance performance by adopting earlier competition and

talent identification have also been associated with the first appearance of RAEs in sport (Daniel & Janssen, 1987). However, RAEs risk did not increase linearly with skill level and age group (Cobley et al., 2009).

A follow-up questionnaire was sent in 1989 to the 256 participants who had answered the 1983 questionnaire. The response rate was 48% (n = 123) for males and 21.9% (n = 56) for females. The participants in the 1989 study were between 28 and 32 years old. Relatively older athletes are expected to have a higher perception of competence (Harter, 1981) and self-efficacy (Bandura, 1986) than younger athletes. The younger athletes are more likely to develop low competence perceptions upon being faced with consistent sport-selection disadvantages and negative sports experiences, and may thus terminate their sports involvement (Weiss & Petlichkoff, 1989).

Drop-out rate

When looking at the dropout rate during the period of the study, we can see that there was no notable statistically significant difference between males and females when compared to each other (between groups). The drop-out rate increased over time and from phase to phase, and it was higher among females. In the 1983 study, a dropout rate of 61.2% (n = 104) was reported for males and 38.8% (n = 66) was reported for females. In the 1989 study, 73.6% (n = 78) and 26.4% (n = 28) rates of dropping out were reported for males and females, respectively. The results from within the groups showed that females were clearly dropping out more than males: 67.3% (n = 66) and 87.5% (n = 28) for both the 1983 study and the 1989 study, respectively. This indicates that male track and field athletes are more able to continue their athletic careers than female athletes (Lippe, 1976). The results show that the highest dropout rate occurred when the athletes were 17 years old. Being relatively older within the competitive track and field age group advantages may be attainable compared with relative younger athletes. A one-year age difference, particularly during puberty, can promote physical characteristics and performance differences (Cobley et al., 2009). The development of greater height, body mass, aerobic power, maximal strength, and speed do provide performance advantages in the different track and field events. Engström (1998) also indicates that boys are more active in competitive sport than girls when they are 14-16 years old. This tendency increases the chances of talent selection and the likelihood of expert coaching in training and competitions.

Because of sex differences according to physical maturity and development of performance, many talented girls do not fulfil their potential in their adolescent years (15-18). Research shows that girls develop their maximal aerobic capacity and maximal strength earlier than boys reaching their potential performance level at the age of 16-18 years (Baker, 2003). Too early specialization and intensive training loads however may lead to stagnation in performance and cause a drop out from sport among female track and field athletes (Vorobjev, 1994; Enoksen, 1985, 2002). During the early stages of athletes development parents and coaches need to pay more attention to the possibility that girls' physical attributes are being overlooked. Coaches should focus more on motivation, basic movements and skill-based activities reducing the dependence upon physical dispositions during adolescent years (Gould, 1988; Baker, 2003; Cobley et al., 2009).

Another reason why girls choose to drop out of competitive track and field sport is related to the traditional pattern of sex roles in society (Lippe, 1976). The research literature claims that the perceptions of sex roles will influence childrens' choice of interests already at the age of 12 (Greendorfer & Ewing, 1981; Hasbrook, 1986). In puberty girls and boys social standing/position is very dependent on behavioural expectations from friends. Furthermore there is an expectancy in the society and among friends that girls should show feminine attributes and values. The sport role is characterized by high aggression, boldness, high self-efficacy and high performance level (Harter, 1993). According to Fasting (1996) girls experience a feminine sex role conflict participating in sport especially in puberty. In track and field sport a sex role conflict might occur when it comes to recruiting girls to the masculine throwing events (Enoksen, 1985, 2002).

An alternative explanation might be that talented girls' dedication to school and homework obligations become more redundant in females than in males (Enoksen, 1985). The cultural expectations and influence from important individuals (parents) in the first years of participation in sport will also have an affect on what interests girls choose to give priority to (Higginson, 1985; Fasting, 1996).

Dropout reasons

TRAINING AND PERFORMANCE FACTORS

In the present study, there was an obvious indication that injury was the most common reason for why relatively many athletes dropped out of competing in track and field at an early age (Table 2 & Table 3). The number of athletes that dropped out due to injury was high when compared to the number dropping out due to other reasons ($p < 0.05$). In the 1983 study, 14.5% ($n = 40$) of 61.6% ($n = 170$) dropped out because of injury, whereas in the 1989 study, 9.8% ($n = 27$) of 38.3% ($n = 106$) gave the same reason. In both follow-up periods, a notable drop-out rate of 24.3% ($n = 67$) was because of injuries. The reported differences between boys and girls indicate a small predominance of girls (Enoksen, 1985). It is quite natural that the lack of athletic progress (Stork, 1984) and an increased frequency of injury (Lippe, 1976; Enoksen, 1985, 2002) often lead athletes to end their sports careers prematurely. According to Cogley et al. (2009), an explanation is that relatively older athletes, originally selected for training and performance on high level during their adolescent years (15-18), withdraw from competition levels during their junior and early senior years due to injury, overtraining, burnout, and boredom. In some highly competitive sports (e.g. track and field, soccer and ice-hockey) many young promising athletes do not fulfil their early potential to an elite level. Some limited evidence suggests that too much focus on early specialization, such as those conducive to RAE occurrence (i.e., through selection and talent-identification processes) are related to increased rates of dropout at late adolescent and junior level (Barynina, 1992; Vorobjev, 1994; Salguero et al., 2003).

The interview data also show a variety of responses underlining the risks of injuries leading up to premature dropout in competitive track and field. Some quotations from the selected athletes in the 1989 and 2000 studies indicated that acute and serious injuries, stagnation in performance, and the lack of professional medical treatment had prevented many athletes from continuing. We should view the occurrence of injuries as a crucial reason explaining and justifying why some athletes quit competitive sports earlier than others. There are further reasons to believe that the connection between the frequency of injuries, stagnation, and motivation to perform is strong, but very complex. The most common types of injuries are stress fractures and pulled muscles. Kröger (1986) claims that despite the tendency of young athletes to quit com-

petitive sports due to injuries, he could not find any meaningful evidence that this indeed was caused by physical injuries, alone. His study implies that psychological elements may be of importance. Research underlines how preventative precautions can reduce injuries among elite track and field athletes. Injuries are often connected with premature specialization, unbalanced and too monotonous basic training, inadequate warm-up routines and training contents, poor running surface and shoes, bad sensorimotoric regulation, poor fat metabolism, and hormonal disturbances (Vorobjev, 1994; Bussmann, 1995; Baker, 2003). Furthermore, it is important that an athlete, together with his or her coach, adapts and develops “optimal” training progression and technical solutions and routines for restitution. Daily communication with a personal coach and frequent contact with other coaches, doctors, physical therapists, and masseuses will be an important measure in this process of awareness (Enoksen, 2002).

EDUCATION AND WORK OBLIGATIONS

The results of this study indicate that problems and symptoms of stress, caused by the requirements of education on the one hand, and the pursuit of a track and field career, on the other hand, can cause large inner conflicts and problems for the athletes. School demands were mentioned as the second most important reason for dropping out of sports in the 1983 study, with a rate of 13.8% ($n = 38$) ($p < 0.05$), and the third most important reason in the 1989 study with 7.6% ($n = 21$) ($p < 0.05$) (Table 3). The total drop-out rate due to school priority during the 25-year study was 21.4% ($n = 59$). In the period from 1975 to 1983, most of the athletes went to obligatory school and high school, and it is no wonder that the conflict of time allocation between sport and schoolwork became a problem for many athletes. The reported differences between boys and girls indicate a small predominance of girls (Enoksen, 1985).

The interview data from the 1989 study also indicate that the time needed to complete the planned training and to achieve high performance often comes in a more-or-less incidental and conflicting antagonism to the time school duties require. The lack of time and the coordination of time are indicated in the literature as a typical reason for a large number of dropouts within competitive sports (Bussmann, 1995). A better usage of time for school work and training would probably change this negative trend to a more positive direction. Furthermore, a better structure of the conditions around the athletes' school and sport efforts,

with a starting point in their individual needs and experiences at school, can have a positive effect on whether the athletes choose to continue their sports careers. A fundamental effort regarding a future professional working career happens mostly during the same phase of life when one needs to spend a great deal of time on demanding training, extensive travel activity, and competitions. This means that the individual planning of an athletic career must have a long-term perspective. The influence of important individuals—(parents, teachers, club coaches, and leaders) is probably of great importance in creating better conditions and inner motivation to be able to succeed as an elite track and field athlete (Bussmann, 1995; Enoksen, 2002). Practical adjustments with regard to optimal arrangements and the usage of training facilities, transportation, and various tools at practice—for example, a heart-rate monitor and computer equipment—will also play an important role in optimizing the usage of time and sustaining the level of motivation.

MOTIVATIONAL ASPECTS

The data indicate that many track and field athletes lost their interest in competition because they viewed the training and competition environment as boring. On the other hand, there are reasons to believe that athletes who experienced regression in their performance lost their motivation, and consequently ended their careers (Table 3). The lack of motivation was the third most-meaningful reason for dropping out in the 1983 study, with 11.6% ($n = 32$) ($p < 0.05$), and the second most mentioned reason in 1989 with 9.1% ($n = 21$) ($p < 0.05$), with a total of 20.7% ($n = 57$) in the period of the study. The reported differences between boys and girls indicate a great predominance of girls (Enoksen, 1985).

Research on motivational aspects underlines that elite athletes will continue in a sport as long as they achieve new goals, have tasks to solve, show signs of improvement, regularly win in competition, and get social attention from meaningful others (Ames, 1992). There is reason to believe that a negative performance development will lead to lower self-esteem and the estimation of potential possibilities for success. Research shows that athletes who dropped out of sports displayed less patience and stamina during competition compared to those who continue, and they also reveal tendencies to more anxiety earlier in their career and have a poorer ability to handle competitive pressure and problems which might occur, in comparison to those who continue (Sarrazin et al., 2002). The stagnation in performance among girls that happens after the maturation

tion period often leads to lower self-esteem, and poorer estimation of potential success and lack of motivation (Gabler, 1981; Butcher, 2002). Research also shows that girls who dropped out of sports at an early age expose more stress and anxiety in training and competition situations, compared to those who continue (Sarrazin et al., 2002).

Data from the in-depth interviews indicated the importance of coaches having general knowledge of the elements influencing the athletes' performance and the specific motivational routines (tasks to solve and goal setting) for enhancing performance and avoiding the loss of motivation. In light of the great demands on time, and the effort required and competitive pressure in today's elite sports, it is not surprising that many talented athletes experience strong conflicts of interest when it comes to prioritizing time in sports versus other hobbies, which difficulty can have an effect on the athletes' motivation. The cost of participation in sport often overcomes the benefits of continuing (Gould & Petlichkoff, 1988). The development of new interests and situations of conflict with important individuals in the athletes' lives are highlighted in literature as perhaps one of the most important reasons for athletes prematurely ending their sports careers (Augustini & Trabal, 1995; Molinero et al., 2006). It will thus be of essential importance that these types of conflicts are discussed with coaches, leaders, parents, and teachers, so that various measures and attempts to find solutions will be tried out and processed at an early age in developing young talent in sport.

THE SOCIAL ENVIRONMENT

Many social factors in the athletic environment can be of importance as to whether an athlete chooses to pursue a sport career or not. Being a part of a stimulating training environment with good relationships to friends and competent coaches may have a positive impact on the choices that athletes might make (Brown, 1985). The influence of social factors was reported to be the fourth most-mentioned dropout reason, both in the 1983 study (5.8% [$n = 16$]) and in the 1989 study (2.9% [$n = 8$]), but was not a marked factor when compared with the other factors in this study. The reported differences between boys and girls were quite small (Enoksen, 1985).

The qualitative data from the 1989 and 2000 studies underline the strong influence of the personal coaches on enhancing performance (information on the perceptions, behaviours, and interaction in different feed-back situations, and the contexts in which coaches work). A posi-

tive relationship to the coach, and a socially supportive climate based on mastery will influence the athletes' career in a positive manner (Ames, 1992; Sarrazin et al., 2002). Furthermore, the qualitative study was useful for investigating various dimensions of coaches' organizational work, such as relationships with parents, the planning of training and competition, and dealing with the athletes' personal concerns. Few of the interviewed athletes indicated that pressure from the coach led to their quitting the sport; while others indicated that they missed a closer follow up by their coaches. Some studies state that a problematic relationship within the training environment, and especially conflicts with authoritarian coaches, can be a very decisive reason for dropping out (Abraham, 1986; Augusstini & Trabal, 1995). Lack of humanity and openness, along with introverted behaviour, are mentioned in the literature as the most negative characteristics of a coach (Molinero et al., 2006). The qualitative data indicate that athletes who had their needs of social attention and positive feedback met by other significant individuals continued their athletic careers. The coach's role regarding social support and creating a challenging and attractive training environment is crucial to an athlete's future success. In this connection, the coach's psychological and pedagogical abilities, expert qualifications, and knowledge of sports-specific training will probably be very important elements and must thus be strongly emphasized in all institutions where the science of coaching is taught (Enoksen, 2002). In this study, some athletes who dropped out because of social factors indicated that a lack of support from family was the reason. The results from 1975, 1983 and 1989 studies showed that more than half of the athletes said that family played a significant role in their decision to participate in track and field sports (Enoksen, 2002). If we will succeed in reducing the rate of premature dropout of young talented athletes, processes of the interaction between the different personal categories must be involved. The family members' attitude towards competitive sports will probably have an impact on a promising young athlete's decision to pursue a sports career or not. Parents and siblings with backgrounds in competitive sports are able to advise and support a young athlete. Research also tells us that lack of support and involvement in the home environment can easily lead to the premature termination of a career in a particular competitive sport (Carlson, 1991).

CHOICE OF OTHER SPORT ACTIVITIES AND INTERESTS

The participation in other sports activities is addressed in some studies (Næsje, 1985; Sisjord, 1993) as one of the main reasons for children and youngsters leaving sports. This was not the case in the present study. In the 1983 study, only 3.3% ($n = 9$) of the elite track and field athletes dropped out due to participation in other sports, whereas in the 1989 study, 1.8% ($n = 5$) had chosen to compete in other sports. The reported differences between boys and girls were also quite marginal (Enoksen, 1985).

Competing in other sports was ranked as the fifth most-important drop-out reason. During the period of this study, some of the athletes who quit track and field gave priority to cross-country skiing and various ball games. In the light of being successful in today's elite sports, it is not strange that many talented athletes can experience a strong conflict of interest when it comes to prioritizing a special sport. The athletes' perception of their own talent, the influence of friends and family, a good relationship with a competent coach, and being a part of a pleasant training environment will all have a positive impact on the athletes' choice (Patriksson, 1987, 1994).

The interview data also underlined the positive influence from significant others and a stimulating training environment when the athletes gave priority to competing in another sport. Some athletes indicated that they were convinced by their friends to take up basketball, while others indicate that their training environment was dominated by soccer (Enoksen, 2002).

OTHER REASONS

In this study, 4% of the athletes (2.2% in 1983 [$n=6$] and 1.8% in 1989 [$n=5$]) chose to stop competing in track and field because of a demanding work situation. Other reasons for dropping out, such as military services, marriage, and family were reported by 10.5% ($n=29$) in the 1983 follow-up study, and 5.4% ($n=15$) in the 1989 follow-up study. The reported differences between boys and girls indicate a small predominance of girls (Enoksen, 1985).

Many athletes find it natural to drop out of sports when they start working and building a family. The military service situation often leads to stagnation in performance in sports and a lack of motivation for youngsters. Athletes who experience regression in their performance often develop negative achievement goals (Ames, 1992; Roberts and Treasure,

1996), and thus end their career too early. Marriage and family, together with a demanding work or educational situation, combined with social immobility (Jonsson, 1983), can have a decisive effect on the athlete's choice to continue an athletic career or not.

FUTURE PERSPECTIVES

In future perspectives several factors may influence the significance of RAEs in the development of expertise performances in young talented athletes. The path to success in sport requires intensive long-term and deliberate practice, often referred to as the “10-year rule of attainment” (Ericsson et al., 1993; American Academy, 2000; Wiersma, 2000; Baker, 2003). It is important to target maturational differences and the process by which athletes are selected (Cobley et al., 2009). According to the research literature, coaches and responsible leaders should reconsider the necessity for early selection, identification, intensive training and representation at junior and adolescent ages beyond stages of puberty and maturation (i.e., 15 to 16 years of age) (Vorobjev, 1994; Baker, 2003; Cote et al., 2007). Delaying selection might reduce RAEs and indirectly help to reduce the risk of compromising the athlete's health during his development. Furthermore, it is important to inform and raise awareness of RAEs in national sports organizations responsible for the infrastructure and coordination of youth sport. Cobley et al., (2009) propose a total (re)consideration of a change in age-group cut-off dates to reduce potential age inequalities in a given sports group. The authors recommend a variation of cut-off dates to be used across sport contexts, although this will not prevent RAEs within a given sport. In addition, high-quality educational procedures and selection criteria of responsible coaches for the talent development of future sport elites is of vital importance.

Conclusion

Over the years, the development of performance in track and field sport has required increasingly more strenuous workouts, early specialization, careful planning, and the ability to handle tough competitions. Young promising track and field athletes who fail to meet these requirements may chose to drop out of competitive sports at an early age. The present study shows the total drop-out rate among males and females, the drop-out rate in the different age groups, and the most significant reasons in-

fluencing the athletes' decision to drop out of track and field sports. The results indicate that females clearly drop out at a higher rate than males ($p < 0.05$). The drop-out rate was at the highest when the athletes were 17 years old. Various reasons were important over the life of the study, and differed at the various stages. Injuries, school demands, and lack of motivation were highly notable reasons to why relatively many athletes dropped out of the sport. Social factors, participation in other sports, demanding work situations, military services, and marriage and family were also reasons for some athletes dropping out. The interview data also reveals a relatively high frequency of injuries, as well as the need for adequate medical care and better support from personal coaches and significant others to enhance the ultimate potential in young talented track and field athletes. This study underlines the need for developing better organizational structures in different age groupings (RAEs), a mastery-oriented, motivational learning climate, advanced technical and physical training facilities, and inductive pedagogical interventions at critical periods.

References

- Abraham, A. *Identitätsprobleme in der Rhythmischen Sportgymnastik. Eine Untersuchung zur Auswirkung sportsartspezifischer Identitätskonstitutionen auf die Identitätsfindung nach Beendigung der leistungssportlichen Laufbahn.* (1986) Schorndorf, Karl Hofmann.
- American Academy of Pediatrics. Intensive training and sport specialization in young athletes. *Pediatrics* 2000;106: 154-7
- Ames, C. Achievement goals, motivational climate, and motivational processes. In: Roberts, G. C. (ed). *Motivation in Sport and Exercise*. Champaign, IL: Human Kinetics 1992: 161-176.
- Augustini, M., Trabal, P. A case study of withdrawal from French boxing. *International Review for the Sociology of Sport* 1995: 34 (1): 69-74.
- Baker, J. Early specialization in youth sport: a requirement for adult expertise? *High Ability Stud* 2003; 14: 85-94
- Baker, J., Côté, J., Abernethy, B. Sport specific training, deliberate practice and the development of expertise in team ball sports. *J Appl Sport Psychol* 2003; 15: 12-25
- Bandura, A *Social foundation of thought and action. A social cognitive theory.* 1986. Englewood Cliffs, NJ., Prentice Hall.
- Barnsley, R.H., Thompson, A.H. Birthdate and success in minor hockey: the key to NHL. *Can J Behav Sci* 1988; 20: 167-76
- Barynina, II, Vaitsekovskii, S.M. The aftermath of early sport specialization for highly qualified swimmers. *Fitness Sport Rev Int* 1992; 27: 132-3
- Brown, B. A. Factors influencing the process of withdrawal by female adolescents from the role of competitive age group swimmers. *Sociology of Sport Journal* 1985: 2: 111-129.
- Bussmann, G. How to prevent "dropout" in competitive sports. *New Studies in Athletics* 1995: 1: 23-29.
- Butcher, J., Lindner, K. L. Johns, D. P. Withdrawal from competitive sports: a retrospective ten-year study. *Journal of Sport Behavior* 2002: 25 (2): 145-163.

- Carlson, R. *Vägen till landslaget. En retrospektiv studie av framgångsrika ungdomar i sju idrottar*. Högskolan för lärarutbildning i Stockholm. (The road to success. A retrospective study of promising athletes in seven different sports. Teachers training college in Stockholm). 1991. Stockholm,
- Cervello, E. M., Eduardo, M., Escarti, A., Guzman, J. F. Youth sport dropout from the achievement goal theory. *Psicothema* 2007: 19 (1): 65-71.
- Cobleby, S., Baker, J., Wattie, N., Mckenna, J. Annual Age-grouping and Athlete Development. A Metas-analytical Review of Relative Age Effects in Sport. *Sports Med* 2009: 39 (3): 235-256.
- Côté, J., Baker, J. & Abernethy, B. Practice and play in the development of sport expertise. I: G.Tennebaum & R.C. Eklund (red). *Handbook of Sport Psychology*, 3rd Edition. New York: Wileys: 89-113.
- Daniel, T.E. & Janssen, C.T.L. More on the relative age effect. *Can Assoc Health Phys Educ recreation* 1987; 53: 21-4.
- Engström, L-M. (1998) Barn- och ungdomsidrott. (Children and Youth sport.) *Svensk idrottsforskning*, 2, 4-7.
- Ek, I. *Utredning om avgångar från friidrotten i tidliga åldrar*. Svenska Friidrottsförbundet. (A report on early dropouts in sport), Stockholm, 1977.
- Enoksen, E. *Frafall i friidrett. Kartlegging av lovende friidrettsutøveres forhold til friidrett i 1983. Analyse av årsaker til frafall og virkemidler for å redusere frafall*. (Drop out in track and field. An analysis of reasons for drop out and procedures to prevent drop out from competitive sport. Norwegian School of Sport Sciences) Oslo, 1985.
- Enoksen, E. *Utviklingsprosessen fra talent til eliteutøver. En longitudinell og retrospektiv undersøkelse av en utvalgt gruppe talentfulle friidrettsutøvere*. Norges idrettshøgskole, (Talentdevelopment in sport. A longitudinal and retrospective study of a selected group of promising track and field athletes), Norwegian School of Sport Sciences). Oslo, 2002.
- Ericsson, K.A., Krampe, R.T. & Tesch-Romer, C. The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 1993: 100, 363-406.
- Fasting, K. *Hvor går kvinneidretten?* (What is the direction of womens' sport? Norwegian Sport Federation). 1996, Oslo.
- Feige, K. (1973) *Vergleichende Studien zur Leistungsentwicklung von Spitzensportlern*. (A comparative study of the performance development in top-level sport). Schorndorf, Karl Hofmann.
- Ferreira, M., Armstrong, K. L. An investigation of the relationship between parents' causal attributions of youth soccer dropout, time in soccer organisation, affect towards soccer and soccer organisation, and post-soccer dropout behaviour. *Sport Management Review* 2002: 5: 149-178.
- Gabler, H. *Leistungsmotivation in Hochleistungssport. Ihre Aktualisierung und Entwicklung*. (Achievement motivation in top-level sport. Current interest and development). 1981. Schorndorf, Karl Hofmann.
- Gambetta, V. New trends in training theory. *New Studies in Athletics* 1989: 4 (3): 7-10.
- Gould, D. Understanding Attrition in Children's Sport. In Gould, D. Weiss, M. (eds). *Advance in paediatric sport science: behavioural issues*. Champaign, IL: Human Kinetics 1987: 61-85.
- Gould, D., Petlichkoff, L. M. Participation motivation and attrition in young athletes. In: Smoll, F. L., Magill, R. A., Ash, M. J. (eds). *Children in Sport* (3rd). Champaign IL: Human Kinetics. 1988: 161-167.
- Greendorfer, S.L & Ewing, M.E. Race and gender differences in childrens' socioialization into sport. *Research Quarterly for Exercise and Sport*. 1981. 52, 301-310.
- Harter, S. The development of competence motivation in the mastery of cognitive and physical skills: Is there still a place for joy? In: G.C. Roberts & D.M. Landers (Eds.), *Psychology of motor behaviour and sport* 1981; 3-29. Champaign Ill, Human Kinetics.
- Hasbrook, C.A. (1986) The sport participation - social class relationship. Some recent youth sport participation data. *Sociology of Sport Journal* 3, 154-159.

- Helsen, W.F., Starkes, J.L., Van Winckel, J. The influence of relative age on success and dropping out of in male soccer players. *Am J Hum Biol* 1998; 10: 791-8.
- Higginson, D.C. The influence of social agents in the female sport-participation process. *Adolescence*. 1985. 20, (77), 73-82.
- Jarver, J. Beware of early specialisation. *Modern Athlete and Coach* 1979: 17(4): 2-3.
- Jonsson, R. *Fortsätta eller sluta?* Uppsala Sociologiska institutionen (Continue or drop-out? Uppsala institution of sociology). Uppsala University, 1983.
- Klint, K., Weis, M. R. Dropping in and dropping out: Participation motives of current and former youth gymnasts. *Canadian Journal of Applied Sport Sciences* 1986: 11(2): 106-114.
- Kreim, G. & Mayer, R. Abbruch der Sportlichen Karrieren im Jugendalter. (Interruption of a sports career in adolescent). *Sportwissenschaft*, 1985: 15(4): 398-409.
- Kröger, C. *Zur Dropout-Problematik im Jugendleistungssport. Eine Längsschnittuntersuchung in der Sportart Volleyball.* (Dropout problems in competitive adolescent sport. A longitudinal investigation in Volleyball), Frankfurt am Main - Thun. Verlag Harri Deutsch 1987.
- Kvale, S. *Interviews: An introduction to qualitative research interviewing.* SAGE Publications, San Diego, CA, 1996.
- Lippe, G.v.d. *Frafallsproblemer i kvinneidretten. Del I og Del II.* Norges idrettshøgskole. (Dropout problems in female sport. Part I and Part II. Norwegian School of Sport Sciences), Oslo 1976.
- Mchale, J. P., Vinden, P. G., Bush, L., Richer, D., Shaw, D., Smith, B. Pattern of personal and social adjustment among sport-involved and non-involved urban middle school children. *Sociology of Sport Journal* 2005: 22: 119-136.
- Moliner, O., Salguero, A., Tuero, C., Alvarez, E., Marques, S. Dropout reasons in young Spanish athletes: Relationships to Gender, Type of sport and level of competition. *Journal of Sport Behavior* 2006: 29 (3): 255-269.
- NFIF (Norges fri-idrettsforbund) *Landsstatistikk for jenter og gutter for sesongen 1974.* Oslo, Statistikk og rekordutvalget 1975. (Norwegian Amateur Athletic Association, Statistics, 1975)
- Næsjø, S. K. *Idrettskarriere for deltakere i Donald-Duck lekene i friidrett.* Hovedfagsoppgave. Norges idrettshøgskole. (Sport career for participants in the Donald-Duck track and field games, Master degree, Norwegian School of Sport Sciences). Oslo 1985.
- Ommundsen, Y. Competence, perceived importance of competence and drop-out from soccer: a study of young players. *Scandinavian Journal of Medicine and Science in Sports* 1997: 7: 373-383.
- Petlichkoff, L.M. Youth sport participation and withdrawal. Is it simply a matter of fun? *Pediatric Exercise Science* 1992; 2: 105-110.
- Patriksson, G. Socialization to sport involvement: Influences of family members and peers. *Scandinavian Journal of Sports Sciences* 1981; 3, 27-32.
- Patriksson, G. *Idrottens barn. Idrettsvanor – stress – "utslagning"*. (Children in sport – sportshabits – stress – "dropouts"). 1987. (S.I). Friskvårdscentrum
- Patriksson, G. *Significance of sport for society. Sport and physical activity as a socialization environment* 1994: Council of Europe. Committee for the Development of Sport (CDDS). Unpublished.
- Roberts, G. C. Treasure, C. Children in sport. *Sport Science Review* 1996: 1: 46-64.
- Robinson, T. T., Carron, A. V. Personal and situational factors associated with dropping out versus maintaining participation in competitive sport. *Journal of Sport Psychology* 1982: 4: 364-378.
- Salguero, P., Gonzales-Boto, R., Tuero, C., Marquez, S. Identification of dropout reasons in young competitive swimmers. *The Journal of Sports Medicine and Physical Fitness* 2003: 43 (4): 530-534.
- Sarrazin, P., Vallerand, E., Guillet, E., Pelletier, L., Cury, F. Motivation and dropout in female handballers: a 21-month prospective study. *European Journal of Social Psychology* 2002: 32: 395-418.

- Sherar, L.B., Baxter-Jones A.D.G., Faulkner, R.A. et al. Does physical maturity and birth date predict talent in male youth ice hockey players? *J Sport Sci* 2007; 25(8): 879-86
- Sisjord, M. K. *Personal experiences from organized sport, comparisons between participants and drop-outs*. Norges idrettshøgskole. Oslo 1993 b.
- Stork, H. M. Soziale Situation und Selektion im Hochleistungssport der BDR am Beispiel des Kunstturnens. In: Howald, H., Hahn, E. (Hrsg). *Kinder Leistungssport*, (Social situations and selection in elite gymnastics in BDR). Basel, Birkhäuser 1982: 253-257.
- Strauss, A. Corbin, J. *Basics of qualitative research. Grounded theory procedures and techniques*. Newbury Park, Sage. 1990.
- Swain, D. A. Withdrawal from sport and Schlossberg's model of transition. *Sociology of Sport Journal* 1991; 8: 152-160.
- Vorobjev, E. *Rapport fra IAAFs idrettsmedisinske kongress i Helsingfors i 1994. For tidlig spesialisering innen barneidretten. Risiko for belastningsskader*. (A medical report from the sportscongress in Helsinki in 1994. Too early specialisation in children and youth sport). Helsingfors, 1994.
- Weiss, M. R., Petlichkoff, L. M. Children's motivation for participation in and withdrawal from sport. Identifying the missing link. *Pediatric Exercise Science* 1989; 1: 195-211
- Wiersma, L. Risks and benefits of youth sport specialization. Perspectives and recommendations. *Pediatric Exercise Science*, 2000: 12: 13-22.

