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## A multidimensional approach to evaluate the policy effectiveness of elite sport schools in Flanders

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### ABSTRACT

The increasing demands of elite sports make it difficult for talented young athletes to balance school and sport. This paper investigates the multi-dimensional policy effectiveness of elite sport schools (ESSs) in secondary education in Flanders. Four hundred and eight elite athletes who graduated from an ESS, and 341 from mainstream schools, completed an online survey. The data showed no clear evidence of more effective outputs (performance), or more positive evaluation of throughputs (processes) by athletes who attended an ESS. Athletes who did not attend an ESS received less support services, but those who did receive such services were generally more satisfied. They were equally satisfied about their coaches' expertise. Only training facilities were rated generally better in an ESS. The study concluded that evaluating effectiveness of ESS (at input-throughput-output level) requires a tailor-made, sport-specific approach. Furthermore, as ESS is only a small part of a total career, many other factors influence long-term success.

The 'global sporting arms race' (De Bosscher et al. 2008) and the subsequent pressures for athletes to perform often impair their educational careers (Conzelmann and Nagel 2003; Gullich et al. 2004; Weber 2009). Athletes start ever younger in their chosen sport (van Bottenburg 2009), in particular in early specialization sports such as gymnastics and figure skating (Balyi and Hamilton 2004). They train for more hours than previous generations, and national and international championships in diverse sports are including ever younger age categories (Gullich et al. 2004; Jonker, Elferink-Gemser, and Visscher 2010). Consequently, much of the investment of time and effort in sport by talented young athletes coincides with their secondary and tertiary education. It is very demanding for some athletes to combine an average of 20–30 h of training per week with regular schooling without losing potential development in one or both. This results in high numbers of dropouts from either sports or education (Brettschneider 1999; De Brandt, Wylleman, and De Knop 2015; European Commission 2004; MacNamara and Collins 2010; Wylleman and Lavallee 2004). Some athletes choose to invest fully in their sport, disregarding their education and in some – less commercialized – sports, their future. The majority

of talented young athletes have little prospect of a full-time professional athletic career. Many, especially in Europe where there is a low profile of interscholastic/intercollegiate sports compared with North America, opt for academic achievement and are often lost to sport (Aquilina 2013; Aquilina and Henry 2010; Wylleman and Lavallee 2004). Athletes who cannot cope effectively with this dual career challenge may be confronted with a crisis or undergo an unsuccessful transition at athletic (e.g. overtraining and injuries) and/or academic level (e.g. decline in academic performance), a decline in mental health (e.g. adjustment problems and psychological disorders) and clinical issues (e.g. social losses, depressed mood, physical and psychological symptoms, or even dropout from their dual career (Wylleman and Lavallee 2004). Being a top-performance athlete is not, after all, a lifetime job, and therefore many talented young athletes prioritize schooling at the expense of an athletic career. Difficulties are faced in particular by athletes in sport disciplines with a high training frequency and athletes in disciplines with a need for specific facilities for longer periods (e.g. winter sports and international tournaments in individual sports such as tennis). These concerns also address other stakeholders, such as governments, who are trying to maintain athletes' right of access to education during elite sport careers (Henry 2013) and coaches or National Sports Federations who acknowledge that many athletes fail to meet the high dual career demands.

These problems have been the driving force behind the development of elite sport and study programmes in many countries since the 1990s, especially in Europe (e.g. Austria, Denmark, France, Germany, the Netherlands and Sweden). These elite sport and study programmes in many countries aim to enable athletes to balance their academic and sporting commitments (De Knop et al. 1999; European Commission 2004, 2007a, 2007b). Both at secondary and higher education levels, several initiatives have been taken to provide talented young athletes with all kinds of support services. The European Union (EU) has also shown a significant concern to protect young athletes in terms of (among other matters) their educational rights and interests and integration into working life. This was initially introduced as an element of Article 165 of the Lisbon Reform Treaty in 2007 (protecting the physical and moral integrity of sportsmen and sportswomen, especially the younger ones) and was made more explicit by the White Paper on Sport (European Commission 2007a, 2007b). Following the designation of 2004 as the 'European Year of Education through Sport' by the European Commission, a number of studies and projects at local, regional, national and transnational levels aimed to investigate or promote the links between sport and education in the then 25 member states of the EU (e.g. Aquilina and Henry 2010; European Commission 2004, 2007a, 2007b; Radtke and Coalter 2007). These studies describe and compare the key characteristics of the programmes established in different nations. Taking the additional cost of these programmes in many countries into consideration, their usefulness is often questioned because it is unclear to what extent these systems improve academic or sports performance.

In Flanders, the Northern Dutch-speaking community of Belgium with six million inhabitants, 'elite sport schools' (ESS) were first established in 1998 with the aim of encouraging young talents to combine an academic career with a sports career in order to enhance their performance in international sports and still attain a secondary education diploma. The ESS offer services to address both goals. Even though the system is well developed and was evaluated as a unique and well-designed system in an international comparative study (De Bosscher et al. 2008), the performance of Flanders in international sport – after

14 years of investment – has not improved. Given that sports federations are funded for talent development mainly through these ESS, questions arise as to whether the ESS, in the way they are developed in Flanders, are an effective and necessary instrument to increase long-term success.

This paper aims to evaluate the effectiveness of the ESS in Flanders from a multidimensional policy perspective as perceived by elite athletes. To the best of our knowledge, few studies have evaluated the effectiveness of such programmes. A Dutch study evaluating the regional ESSs in the Netherlands concluded that athletes who had attended an ESS were no more likely to attain a higher level of sports performance than their counterparts who had attended mainstream secondary schools. Furthermore, talented young athletes who attended an ESS were less motivated to do well in school and attained lower educational levels (van Rens, Elling, and Reijgersberg 2012). Similar findings were noted in a German study, which analysed the performances of 199 elite athletes in the 2004 summer Olympics. The study also found more positive results for the 2006 winter Olympics, and proposed that this could be explained by the location of the schools, which were situated near special winter training facilities (Emrich et al. 2009). Taking these findings into consideration, doubts arise as to the necessity of these elite sport and study systems as a means to improve education and sports performance and whether they are effective and justifiable in terms of use of public money. Whereas these studies focused primarily on the goals or outputs (ie sports performance and school performance), this article takes a multidimensional approach to policy effectiveness of top sport and education programmes in secondary education (Chelladurai 2001; De Bosscher et al. 2011) from the perspective of the stakeholders (elite athletes). The multidimensional approach simply suggests that an organization should be evaluated along different dimensions, including the inputs (e.g. funding), throughputs (processes, e.g. programme support), outputs (goals, e.g. performances) and feedback of a system (Chelladurai 2001). Policy evaluation that is solely based on goal attainment does not always provide an insight into the extent to which these goals are the result of the policies or whether good or bad governance has contributed to reaching these goals (De Bosscher et al. 2011). Chelladurai and Chang (2000) suggest involving particular stakeholders in elite sport to evaluate the services, as it is the consumers who know the quality of a service as they experience it. Accordingly, in this paper, the ESS are evaluated at the level of inputs–throughputs and outputs from the perspective of the elite athletes, as one of the stakeholders. In this respect, this paper seeks to make a contribution to the methods suitable for evaluating the effectiveness of national (government) ESS, at the input–throughput–output levels, as a tool for combining elite sports and study during secondary education.

The research questions are thus: (1) To what extent have the ESS contributed to the sports policy objectives of the Flemish Government to improve international sporting success and meanwhile ensure young athletes have a fulfilling secondary school education trajectory? (Flemish Government 2010) (2) Do elite athletes who have attended an ESS perceive the processes of combining high-level sports training with study better than elite athletes who decided not to attend an ESS (but were eligible to do so), with regard to the academic and sport services they received?

The next parts give deeper insights into the need for elite sport and study systems, followed by a framework for the multidimensional evaluation of effectiveness that is subsequently applied to the ESS system in Flanders.

## The rationale behind elite sport and education systems

As most countries have compulsory education up to the age of 17 or 18 years, talented young athletes will be confronted with a major overlap between their secondary education and their athletic development (Aquilina and Henry 2010; De Knop et al. 1999). At the athletic level, this period coincides with a transition from initiation in the sport – when athletes are introduced to competition, with an emphasis on fun and enjoyment, often practising several sports – to the talent development phase when athletes become highly committed to their sport, train more and become more specialized (Baker, Côté, and Abernethy 2003; Wylleman and Lavallee 2004). During this stage, athletic achievements increase and competition intensifies (from regional to national to international competitions). While important progress must be made in sports in order to reach an expert performance level, at the same time, this is also a period of immense pressure at school (Brettschneider 1999). This immediately also implies that most athletes' time is dedicated to developing their sporting career, with sometimes little time left to develop other aspects of their lives outside their sport, such as family and friends. During this period, Wylleman and Lavallee (2004) state that talented young athletes are thus not only confronted with challenges at the academic and athletic levels, but in fact, throughout their dual careers, they face concurrent challenges and (possibly conflicting) requirements. At the psychological level, these include, for example: the start of adolescence, identity foreclosure, stress related to exams, increased need for independence and self-regulation, increased pressure to perform and coping with injuries. At the psychosocial level, challenges are, for example: emotional independence from parents, coaches become more demanding, more mature relations with peers and integrating in a new social network. Athletes face sometimes also financial strains (e.g. increased tuition fees and costs for private training) (Wylleman and Lavallee 2004). These transitions in different aspects of athletes' lives will influence their sports and academic careers and make the balance between both difficult to maintain. For example, when travelling for sport-related reasons, many student-athletes have to take a break from their education or try to study on their own. When they return to their educational setting in the home country, these student-athletes typically find themselves behind other students and often experience a lack of understanding and support from their schools or universities (Wylleman and Lavallee 2004).

Looking at the long-term career prospects in elite sport, only a few athletes are sufficiently financially rewarded to allow them to make a living out of their sport. Some talented young athletes may thus choose to abandon their athletic pursuits and give priority to academic achievement. Furthermore, most elite athletes end their sporting careers at an age when non-elite athletes still have to work for more than 30 years before they can retire (Conzelmann and Nagel 2003). In view of the risks (e.g. career-ending by injury) and disadvantages (e.g. unfulfilled academic potential and lack of financial security and stability) of developing an elite sport career, and taking into account the value attributed by parents and by society at large to an academic formation and completion of further or higher education, many athletes drop out from sport to prioritize their school performance (MacNamara and Collins 2010).

It is in the light of these difficulties, and with the aim of improving sport performances without harming the athletes' academic prospects, that many countries have set up national schemes for the combination of elite sport and study, of which Australia (1981), France (1974) and Finland (1986) are among the prime movers (De Bosscher et al. 2015). In many other countries, student-athletes are still obliged to organize their studies for themselves as

well as possible, and depend on the goodwill of persons in key positions of an organization or institute that support them, for example, with flexible school time, exam scheduling or exemptions while, in fact, a systematic approach, based on general and sustainable financial and legal arrangements, is needed (De Bosscher et al. 2015).

### **Framework of multidimensional policy effectiveness**

A multidimensional approach was suggested by Chelladurai (2001) to evaluate the effectiveness of federations (national sport organizations) and was later proposed in sport policy literature as a suitable method to evaluate elite sport policies from a broader perspective than simply win/lose outcomes (De Bosscher et al. 2011). This approach assumes that elite sports policies should be evaluated at multiple levels (ie input, throughput and output) and by different stakeholders (constituent feedback). In the literature on organizational effectiveness, the goals model or focus on *outputs* (Price 1972) refers to the degree to which an organization has achieved its goals. After all, the ultimate goal and *raison d'être* of the ESS is to increase the long-term probability of the success of the selected athletes, as well as the attainment of secondary education qualifications (Flemish Government 2010, 2012; Gullich et al. 2004). When these goals are related to the *inputs* or provision of financial resources by an organization, effectiveness is evaluated as a system resource model, as originally introduced by Yuchtman and Seashore (1967). In this paper, this is concerned with the investment of public money in relation to the success of the athletes in international competitions. In an internal *process* approach (Pfeffer 1977), effectiveness involves an emphasis on the *throughputs* which link the inputs to outputs: if the internal processes are internally logical, consistent and without friction, it can be assumed that the organization is effective (Chelladurai 2001). This relates to the quality of the services delivered to support athletes during their academic and sporting careers in secondary education, such as flexible school time, training schedules or exam scheduling. Measures of the effectiveness of athletic programmes could thus be the general policies and procedures, the satisfaction expressed by coaches and athletes and the lack (or presence) of conflict within the department responsible (Chelladurai 2001). Finally, the multiple constituency model (*feedback*) (e.g. Papadimitriou and Taylor 2000), or the participant satisfaction model, defines organizational effectiveness according to organizations' 'ability to satisfy key strategic constituencies in their environment' (Sowa, Selden, and Sandfort 2004, 713). In the context of elite sport, these are the athletes in the first instance. According to Chelladurai (2001), effectiveness cannot be assessed using a single indicator, but rather it is necessary to integrate these levels through a multidimensional approach at the input–throughput–output levels. In this paper, we will evaluate the effectiveness of ESS in Flanders at the levels of inputs, throughputs and outputs from the athlete's perspective.

### **Background to the ESS in Flanders at the input–throughput–output levels**

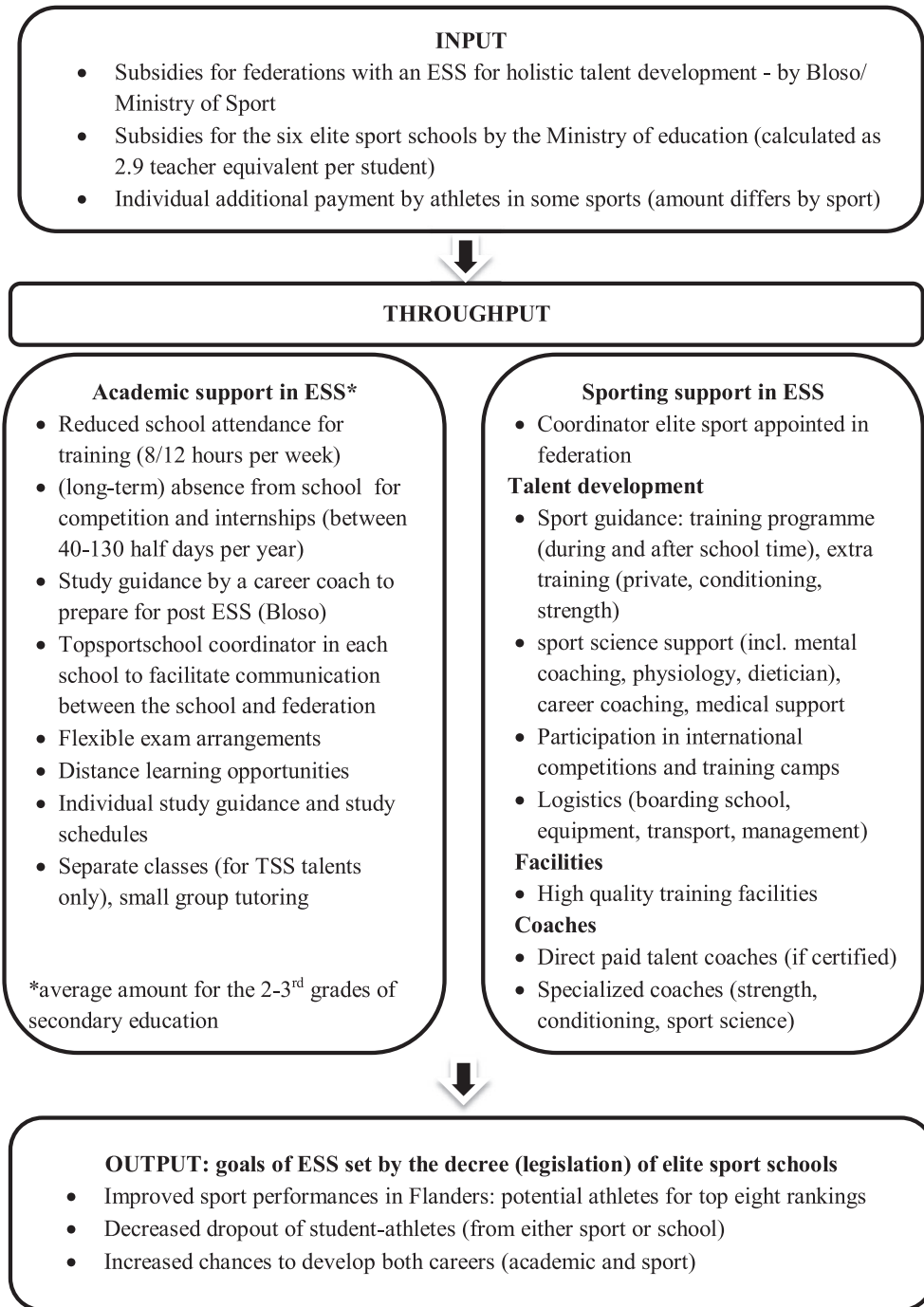
As determined by a decree of 2001, sports federations in Flanders receive subsidies specifically for the development of young talent, primarily those who attend one of the six recognized ESS in secondary education (12–18 years). These ESS, established since 1998, are intended to balance the academic and athletic development of elite athletes, with the primary goal of improving international sporting performance in the longer term (Flemish

Government 2012). This was the political answer to a long-lasting struggle to keep talented young athletes in sport without neglecting their studies. The system is distinctive in that there is a partnership between the Ministry of Education and the Ministry of Sports, and other parties involved in education and sport which together determined a legal framework that regulates in what ways student-athletes can train during school time and be absent for competition. It also regulates what kind of support services student-athletes can receive for education and sport while working towards a normal secondary education diploma (Bloso 2010). The Ministry of Education takes care of the costs of the study curriculum and additional educational services are coordinated by the school, which appoints a study coordinator (funded by a ratio per elite athlete). The Ministry of Sports, through its sports administration Bloso, is in charge of the overall coordination of the ESS and funds part of the sports programme through the federations.<sup>1</sup> A *'topsport-school-coordinator'* is appointed in each ESS and in each federation to coordinate the sports programme and the collaboration between the school, federation, teachers, coaches and athletes. The federation determines the selection criteria for talents that can enter an ESS, based on the requirements for the sport.

Figure 1 shows the input-throughput-output framework applied to the ESS. The throughput consists of specific services to support both the academic development and sport development of talented young athletes. To mention some of the key points, young talented individuals have a reduced study time of 8 hours (first year) or 12 hours (second and third years) per week within the secondary school curriculum to enable them to spend extra time on training while qualifying for the same certificate as mainstream students. Furthermore, they are allowed between 40 and 130 half days a year of absence for international competitions (this allowance is needed as education is compulsory in Belgium until the age of 18). They are taught in small groups, mostly in separate classes, and receive all kinds of specific educational support services (e.g. examination scheduling, individualized study schedules, distance learning and career coaching/planning). For financial feasibility reasons, the ESS offers only a selected and limited range of the main school subjects. On the sports side, services comprise extra sports training (during school time) and training in private groups, sport science support, specific talent coaches appointed in the ESS, medical support and high-standard training facilities. The ESSs only admit the very best potential athletes in a sport.

The Flemish system is a state-centric approach, which, according to Aquilina and Henry (2010), means that responsibility is defined through legislation and statutory requirements, so that the flexible arrangements for athletes do not depend on individual initiatives from athletes, parents, coaches, clubs or federations. Furthermore, provision in ESS is centralized in the sense that – from the second year – all sports (with the exception of football) are sited in just one of the six locations. Under the principle of *'elite sports, education and living in one place'*, the centralized approach implies that ESS pupils tend to board at school, enabling the running of a time-efficient system for their training.

Talented young athletes are encouraged by Bloso to follow the trajectory of talent development primarily via these ESS. The awarding of *'top talent status'* provided to talented young athletes outside the ESS (ie promising young people in mainstream schools) has been reduced since the inception of the ESSs. In some exceptional cases, talented young athletes who desire not to be enrolled in an ESS may organize some facilities by themselves, with the local school environment; however, they will not be legally allowed to be absent from school for training or competitions to the same frequency. Accordingly, the provision of



**Figure 1.** Framework for a multidimensional approach to evaluate effectiveness of ESS, adapted from De Bosscher et al. (2011).

subsidies to federations for talent development is primarily related to the existence of an ESS and therefore federations develop their talent development programmes mainly (only) in this direction. Still, many talented young athletes prefer to attend mainstream schools,



thereby missing opportunities to train in optimal circumstances with their sport's federation (De Bosscher et al. 2011).

After 14 years of increasing investments, the number of students in the ESS has more than tripled, from 201 in 1998 to 690 in 2011/2012. Also, the number of different sports has increased: from 12 different sports to 17 in the same period. The ESSs are often criticized, especially by the media, because the sports performances of these athletes at a senior level have not been very glorious, despite investment in ESS as a tool to improve success on the longer term (e.g. 10 years). Doubts are expressed in terms of whether elite athletes, who have ever attended an ESS, have performed better than those who have not. Concerns also include issues regarding the centralization and decentralization of talent development (and leaving the home environment early to stay in boarding schools), the personal development of athletes, the most appropriate age for talent selection for an ESS, dropout rates from junior to senior athletes and the quality of the sports programmes delivered (Flemish Government 2012). The Ministry of Education has also raised concerns in relation to the academic achievement of the pupils, the return on investment for extra study coordination and the high demands this entails from teachers and the school environment (Onderwijsinspectie 2011). This article focuses primarily on the sport-related context as the study was commissioned by the Ministry of Sports, while at the same time, the Ministry of Education developed a separate evaluation of the study context in ESS (Onderwijsinspectie 2011).

## Method

### Subjects

To compare elite athletes who had (ever) attended an ESS with those who had not, retrospective (mainly) quantitative data were collected from senior elite athletes in 14 sports affiliated with an ESS in Flanders. Contact details from athletes who had *ever* participated in an ESS (since 1998, or who had dropped out earlier) were obtained from Bloso. Contact details for those elite athletes who had *never* attended an ESS (but were eligible to do so, ie they fulfilled the criteria defined by the federation) were less easily available. To avoid a selection bias, all athletes had to fulfil the same criteria as athletes who went to an ESS. To retrieve those athletes, two procedures were applied, top-down and bottom-up procedures:

- (1) bottom-up: athletes who had ever received a 'top talent status' from Bloso or had ever been selected by their federation as a young talent for important international youth events (e.g. the European Youth Olympic Festival, European or World Youth championships) were registered;
- (2) top-down: all senior athletes who had been selected for European or world senior championships or the Olympic Games over the previous four years were identified (with the help of Bloso, the federation or Facebook and an Internet search). We then determined retrospectively whether or not these athletes had ever attended an ESS.

In the subsequent sections of this paper, the athletes who had (ever) been in the ESS system are referred to as 'within ESS' and those who had not as 'outside ESS'.

## Instruments

Data on *inputs* concerned the financial investments made by successive governments in the ESS and were obtained from Bloso. Data on the *throughputs* were collected through lengthy surveys (41 questions and 18 pages) with athletes within and outside an ESS. Based on the framework in Figure 1, the questions were concerned with three areas that are related to the ESS in Flanders: (a) the services and provisions (academic and sports-related) for talented young athletes during their secondary education period (12–18 years), (b) athletes' assessment of the training facilities related to the ESS and (c) the ESS coaches' expertise, availability and relationship with athletes and club coaches. In addition, the investigator undertook 10 semi-structured interviews, concerned with the services (not) needed for young talents when combining a sport and academic career, in order to refine the theoretical framework and the content of the surveys (one with Bloso, five with experts committed to an ESS and four with experts outside an ESS). Subsequently, a pilot study was conducted with 10 athletes to evaluate the survey structure and determine whether the questions were understandable.

*Output* data were collected in the questionnaire by asking elite athletes about (a) their current performance level, (b) the highest level they had ever reached as a senior elite athlete using six different levels that were later reduced to three categories (world/European top 3, world top 12 or European top 8 and national level/international selection) and (c) continued (or not) higher education. To ensure content validity, examples were provided for each of these.

At the level of *throughputs* (processes), the surveys contained mainly closed questions with (a) quantitative data (for example, the number of training hours, age and number of years that athletes had attended an ESS) and (b) subjective indicators exploring the perceptions of the athletes (based on five-point Likert scales, anchored at 1 = very unsatisfactory and 5 = very satisfactory), for example, concerning the different support services they received as a young talent to enable them to combine training with their studies. Services that athletes outside an ESS receive (both academic and sports-related) would depend on each individual athlete, and their clubs or federations. Therefore, these surveys also contained objective dichotomous questions (for example, 'Did you receive – as an upcoming talent – psychological coaching from a sports psychologist?'). Such questions were not necessary for athletes within ESS, who automatically receive these services. A limited number of open questions were added to refine the insights obtained (e.g. the reasons for dropping out of an ESS, the reasons for not attending an ESS or the strengths and weaknesses of an ESS).

## Procedures

The surveys were disseminated online using the software tool Osucre and included a 'progression informer' because of the length of the surveys (30–45 min). Respondents could stop the survey and continue at any moment. The respondents were informed that their anonymity would be maintained, but identification was registered to enable the response rates to be followed up. Athletes were initially contacted by email. Considering the difficulty of reaching the target group of elite athletes (De Bosscher et al. 2008), they first received a reminder after two months and non-respondents were subsequently contacted by telephone (up to three times) in order to increase the response rate.

## Data analysis

Data were analysed in SPSS, using the descriptive statistics frequency distributions, percentages, means and standard deviations. For the Likert scale questions, ‘net ratings’ (ie positive answers minus negative answers) were calculated. This represents the difference between answers indicating satisfaction and those indicating dissatisfaction divided by 10; thus, the net rating varies between +10 (when all respondents are satisfied) and –10 (when no respondent is satisfied). These net ratings help compare sports or items objectively (De Bosscher et al. 2011).

Finally, a Mann–Whitney test was conducted to compare the elite athletes within ESS to those outside ESS (for not normally distributed ordinal data).<sup>2</sup> For dichotomous questions, a Chi-square test was conducted.

## Sample

A total of 1135 surveys were disseminated, of which 749 were returned: 408 (64%) from athletes within ESS and 341 (69%) from athletes outside ESS. To analyse the meaning of the response rate, the representativeness of the responses by sport was compared with the distribution list. As shown in Table 1, the responses represent the actual situation well, except for an under-representation of athletes within ESS in basketball (34%,  $n = 31$ ), and of athletes outside ESS in badminton (25%,  $n = 1$ ), table tennis (33%,  $n = 3$ ) and gymnastics (50%,  $n = 2$ ). In these sports, talent development primarily runs through the ESS system in Flanders. Clearly, the total sample is influenced by the different sizes of sports, such as an over-representation in athletics, volleyball and handball and an under-representation in triathlon, fencing, golf and taekwondo. The under-representation noted is in part related to the later introduction of these sports in ESS. Sport-by-sport differences therefore need to be taken into account in the data analysis.

**Table 1.** Response rates from athletes in and outside an ESS.

	Athletes in an ESS		Athletes outside an ESS	
	Sent	Received	Sent	Received
Athletics (1998)	95	78 (82%)	92	85 (92%)
Basketball	92	31 (34%)	75	39 (52%)
Gymnastics (1998)	58	31 (53%)	4	2 (50%)
Judo (1998)	55	40 (73%)	51	31 (61%)
Tennis (1998)	43	23 (54%)	29	18 (62%)
Volleyball (1998)	92	60 (63%)	78	52 (67%)
Cycling (2002)	22	16 (73%)	79	57 (72%)
Swimming (2002)	31	22 (71%)	25	19 (76%)
Handball (1998)	71	49 (69%)	36	22 (61%)
Badminton (1998)	20	15 (75%)	4	1 (25%)
Ski/snowboard (1998)	17	10 (59%)	8	5 (63%)
Triathlon (2005)	10	9 (90%)	5	5 (100%)
Fencing (2007)	3	3 (100%)	3	3 (100%)
Golf (1999)	12	8 (67%)	2	1 (50%)
Taekwondo (2003)	7	5 (71%)	0	0
Table tennis (1999)	13	8 (62%)	3	1 (33%)
Total	641	408 (64%)	494	341 (69%)

Note: The dates between brackets are the year that the sport started with an ESS.

**Table 2.** Sample characteristics from surveyed athletes in and outside an ESS.

	ESS	Outside ESS
<i>Gender</i>		
Male	46%	50%
Female (male)	54%	50%
<i>Age**</i>		
<18 years	10.5%	8.4%
18–23 years	66.5%	51.3%
24–28 years	23.0%	40.3%
<i>Years at the ESS</i>	±2.8	
1–2 years	45.0%	
3–5 years	51.7%	–
>5 years	3.32%	
Early drop out of an ESS	41.0%	–
<i>Living situation**</i>		
Full-time athletes	11.0%	13.9%
Part-time athletes (part-time job or study)	25.0%	13.9%
Full-time job	13.4%	21.6%
Full-time student	34.9%	40.2%
Other	15.7%	10.3%
<i>Still active as an elite athlete**</i>	61.7%	84.3%

\*\* $p < .01$ .

### Sample profile

Table 2 gives an overview of the sample characteristics. There are no significant differences in gender. A slightly higher number of elite athletes within ESS report combining their study with a part-time job or being a part-time student, whereas in the outside ESS sample, more respondents were full-time workers or full-time students. The proportion of full-time athletes is comparable (11.0% within ESS and 13.9% outside ESS). A greater proportion of elite athletes outside ESS were still active at the time of the survey (84%).

One point of note concerns the age of the athletes, with athletes outside ESS tending to be older: more athletes ( $n = 62$ , 40%) are 24–28 years old, compared with 22 (23%) within ESS. A possible explanation for this may be related to the different sample sizes for different sports (see earlier) with regard to early specialization and late specialization sports. For example, the sample contains a higher number of gymnasts within ESS (gymnasts tend to be younger) and cyclists outside ESS (cyclists tend to be older athletes).

Some athletes within ESS dropped out early: 41% stopped at an early age, on average 15.5 years. Reasons for dropping out were generated from an open-ended question and were summarized using content analysis as: injuries (27.6%), not fulfilling the criteria of the ESS (18.8%), difficulty combining sport with studies (9.4%) and wish to study an academic subject not available in an ESS (8.2%).

Athletes outside ESS were asked their reasons for not attending. These were mainly organizational (53%, such as the limited study orientation of the ESS, transport, boarding school and quantity of training), guidance (17%, study support and collaboration with personal trainer) and social (10%, miss peers and/or family).

Finally, the athletes within ESS spent on average 2.8 years at an ESS, with averages for particular sports ranging from 4.3 years for table tennis, 3.4 years for tennis, 3.1 years for gymnastics and handball to 1.3 years for fencing and 2.0 years for cycling. It should be noted that fencing developed an ESS relatively late, namely in 2007. Of all the respondents, 45% spent one to two years at an ESS and 51.7% between three and five years. Also, athletes

had on average already specialized in their sport for six years before enrolment in an ESS. Suspecting that ESS have undergone changes over the past 14 years, it could be expected that the duration of stay at an ESS would change if we only looked at the later years of the ESS. However, when extracting the data into two subgroups (before and after 2005), no significant differences were found.

## Results – inputs

Data on *inputs* concerned the financial investments made by Bloso to support the combination of elite sport and studies during talent development. Funding is distributed among sports federations with an ESS, increasing from 0.18 million euros in 1998 to 2.4 million euros in 2012. This amount is 26.0% of the total subsidies for federations in elite sport and approximately 10% of total elite sports expenditure. Since 2009, these have stabilized (see Table 3). In addition to this, the Ministry of Education funds the ESS (total additional cost unknown), providing adapted study support for a reduced school curriculum of 20 h (instead of the 32 h for mainstream students), paying for one study coordinator in each school (six in total) and arranging for ESS athletes to be provided with teaching in separate classes as much as possible.<sup>3</sup>

## Results – throughputs

The throughput section consists of the previously mentioned three clusters that have been compared between both groups of athletes: (a) the general services, extra attention and provision as an upcoming talent; (b) the quality and availability of training facilities; and (c) the coaches' expertise within and outside an ESS. Furthermore, athletes in an ESS were also asked to assess the services after they had left an ESS.

### (a) *Extra attention and provision for talented young athletes*

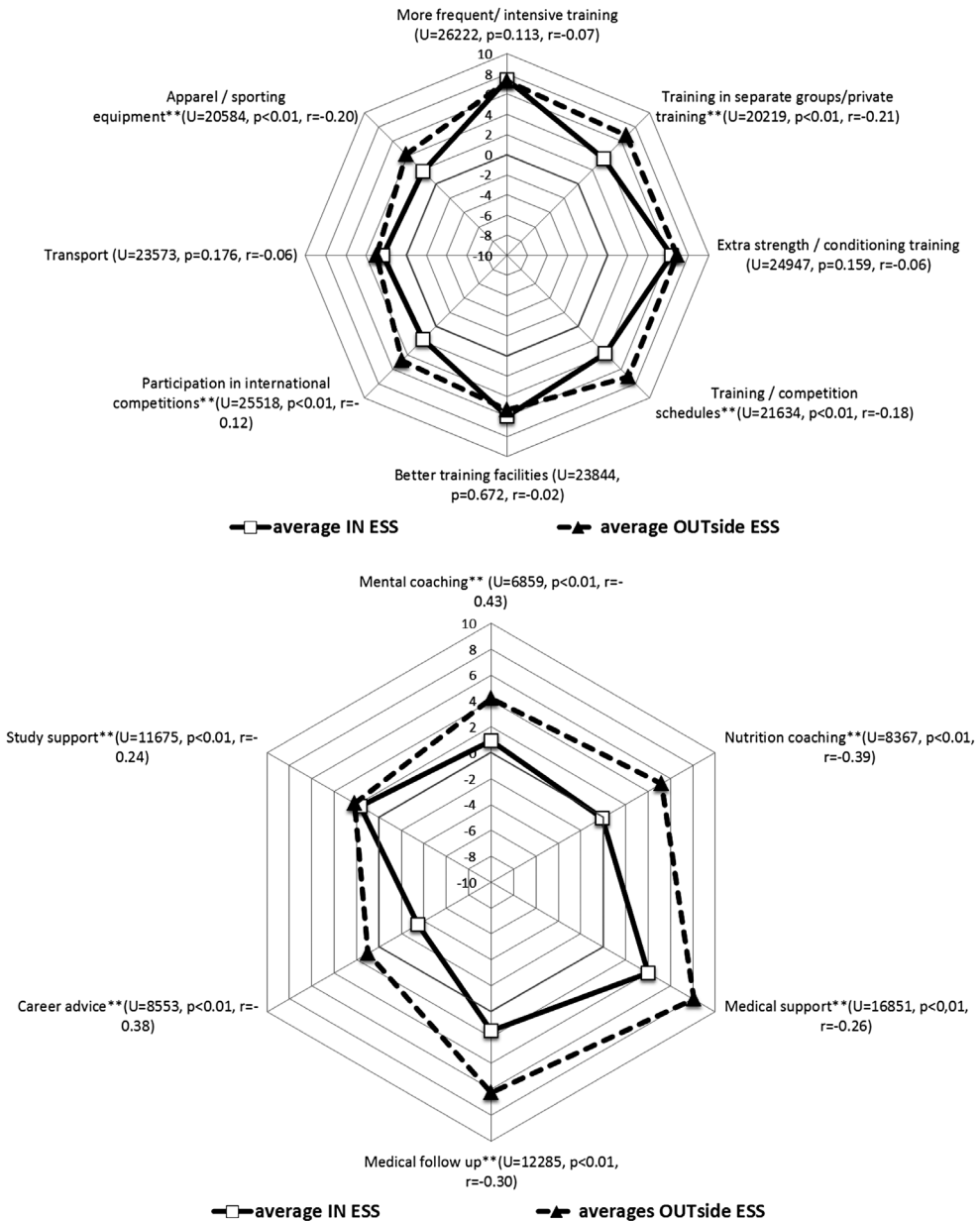
The services offered within ESS with regard to study support and the sport programme (as previously shown in Figure 1) are not systematically available for talented young people outside ESS. In general, 66% of the elite athletes within ESS were satisfied with the services they had received in these schools, particularly in relation to their training activities; 14% were not, mostly in relation to study guidance.

Accordingly, the first part of the questionnaire for athletes *outside* ESS was concerned with whether or not they, as talented junior athletes, had received any extra benefits from their sports club (or personal coach), governing body or other sources. A category 'not necessary' was added for athletes who considered these services redundant. The items were divided into eight items relating to 'support services' and six items relating to 'coaching services' (Table 4). As can be seen from Table 4, on average, 35% of the athletes outside ESS indicated that they did not have access to any of the support services. This negative response was even higher for the use of better training facilities and transport. Furthermore, more than 75% of the athletes indicated that they did not receive psychological coaching support, career advice or study support.

Athletes who did receive these support and coaching services were asked to rate them. Total scores were calculated as net scores. These data were compared for athletes within and outside ESS for each service as shown in the summarized radar chart in Figure 2. A general observation is that the net scores are generally positive for all services, which

**Table 3.** Subsidies from government (divided by Bloso) for the ESS (all sports) (× 1000 euros).

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
180		397	459	459	575	655	758	1.288	1.621	1.621	1.698	2.250	2.459	2.334	2.427



**Figure 2.** Average net scores for support services and coaching services for elite athletes in and outside an ESS (\*\* exact sig.  $p < .01$ ; \*  $p < .05$ ).

means that more athletes gave positive than negative ratings, except for career coaching ( $-3.5$ ). Another interesting finding is that elite athletes outside ESS generally rated the services more positively than elite athletes within ESS, with the largest gaps in nutritional coaching ( $U = 8367, p < .01, r = -0.39$ ), medical support and follow-up ( $U_{\text{support}} = 16,851, p < .01, r = -0.26$ ;  $U_{\text{follow up}} = 12,285, p < .01, r = -0.30$ ), mental coaching ( $U = 6859, p < .01, r = -0.43$ ) and career advice ( $U = 8553, p < .01, r = -0.38$ ).<sup>4</sup>

**Table 4.** Percentage of athletes outside an ESS that did not receive any of the following services.

Support services	% Not	Coaching services	% Not
More frequent and more intensive training	19.1	Mental coaching (by a sport psychologist)	80.6
Training in a separate group/private training	33.6	Nutrition coaching (by a dietician)	65.0
Extra strength and conditioning training	32.0	Medical support (from specialized doctors)	31.5
Training and competition schedules	34.4	Medical follow-up (medical diary; injuries)	58.3
Better training facilities	52.8	Career advice – career planning	80.6
Participation in international competitions	21.1	Study support (e.g. planning for exams)	77.2
Transport	49.6		
Apparel and sporting equipment	36.1		
Average	34.8	Average	65.5

**Table 5.** Net scores by sport on the sum of eight items of support services and the sum of six items of coaching, by athletes in and outside an ESS.

	Support (sum of 8 items)		Coaching (sum of 6 items)	
	In ESS	Outside ESS	In ESS	Outside ESS
Total (all sports)	4.1	5.4	0.75	4.5
Athletics	5.3	6.1	0.8	5.2
Badminton	5.6	NA	1.5	NA
Basketball	2.6	7.2	0.2	3.4
Cycling	2.0	5.6	-4.3	3.2
Gymnastics	5.9	NA	1.9	NA
Handball	4.2	2.4	2.9	2.5
Judo	2.6	5.4	-2.4	5.6
Swimming	6.2	5.4	3.5	4.9
Tennis	0.6	0.2	0.3	3.1
Volleyball	4.2	5.9	0.7	5.7

Notes: NA, not available: when  $n < 20$ , the net scores were not calculated. Mann–Whitney U tests were obtained for each item separately.

Furthermore, data were compared sport by sport (when the response was at least  $n = 20$ ), as shown in Table 5. For clarity, this table presents the average sum of the net rating scores of the eight different items identified as support services and the sum of the net rating scores of the six different items identified as coaching services. Looking more closely at Table 5, negative average net scores are found for coaching support within ESS in judo (-2.4) and cycling (-4.3). There are some neutral scores (around zero) in tennis (within and outside ESS), athletics, volleyball and basketball (coaching within ESS). Interestingly, in some sports (basketball, cycling, judo and volleyball), support services and coaching services were experienced more positively by athletes outside ESS. This was not the case only in handball and in swimming (for support services only).

Finally, athletes who attended an ESS were asked whether they were/are still able to make use of different support and coaching services having left the ESS. On average, 49% of the athletes within ESS reported that they could not use any of the support services once having left the ESS and 69% could not use any of the coaching services.

#### (b) *Training facilities*

Elite athletes in both groups were asked to rate (a) the quality and (b) the availability of training facilities. Table 6 shows the total net rating and the net rating by sport. A Mann–Whitney test indicated that the ratings for quality and availability were higher for athletes within ESS than outside ESS ( $U_{\text{quality}} = 19,517, p < .001, r = -0.24$ ;  $U_{\text{availability}} = 18,839, p < .01$ ,



**Table 6.** Net rating of the quality (left) and availability (right) of training facilities rated by athletes within and outside an ESS.

	Quality**		Availability**	
	In ESS	Outside ESS	In ESS	Outside ESS
Total (all sports)	6.0	2.3	5.7	2.0
Athletics	6.3	1.9**	4.8	1.3*
Badminton	6.2	NA	6.9	NA
Basketball	7.3	4.1	7.3	2.9
Cycling	6.2	1.7	4.6	2.8
Gymnastics	8.7	NA	7.8	NA
Handball	6.1	-0.6**	5.7	-0.6**
Judo	3.2	3.1	4.2	0.6
Swimming	7.1	-0.9**	4.1	-1.8*
Tennis	3.6	6.7	5.0	6.7
Volleyball	6.9	7.0	7.5	6.3

Notes: NA, not available: when  $n < 20$ , the net scores were not calculated.

\*\*Exact sig.  $p < .01$ .

\* $p < .05$ .

**Table 7.** Net rating scores by athletes in and outside an ESS of coaches' expertise, availability and relationship.

	In ESS	Outside ESS
Knowledge about international elite sport	7.6	7.4
Professionalism	6.1	6.8
Relationship with the athlete**	4.2	6.9
Relationship with the club coach**	1.3	6.4
Quality of training	6.9	8.2
Presence at training	8.2	8.1
Presence during competition**	4.9	7.4
Presence during internships	7.5	6.7
Global coach evaluation to train elite athletes at the highest level	4.6	5.3

\*\*Exact sig.  $p < .01$ ; \* $p < .05$ .

$r = -0.27$ ). Broken down by sports, this was mainly the case for athletics ( $U_{\text{quality}} = 802.0$ ,  $p < .01$ ;  $U_{\text{availability}} = 857$ ,  $p < .05$ ), handball ( $U_{\text{quality}} = 8135.5$ ,  $p < .01$ ;  $U_{\text{availability}} = 128.5$ ,  $p < .01$ ) and swimming ( $U_{\text{quality}} = 36.5$ ,  $p < .01$ ;  $U_{\text{availability}} = 51.5$ ,  $p < .05$ ). Only in tennis were values higher for outside ESS than for within ESS; however, this was not significant ( $U_{\text{quality}} = 20.5$ ,  $p = .953$ ;  $U_{\text{availability}} = 18.5$ ,  $p = .768$ ).

(c) *Coaches' expertise, availability and relationship with athletes and club coach*

Athletes were asked to rate nine different items concerning the coach and their relationship (affinity) with the coach (Table 7). The table shows that ratings are generally positive for both groups. However, three elements were rated significantly higher by athletes outside ESS: the relationship of the coach with the athlete ( $U = 27,806$ ,  $p < .01$ ), the relationship with the club coach ( $U = 20,475$ ,  $p < .01$ ) and the presence of the coach during competitions ( $U = 27,335$ ,  $p < .01$ ). When looking more closely at the sum of net ratings of different items by sport (not presented in the table), the differences were most notable in basketball and cycling (with net ratings that were, respectively, 3.1 and 3.8 points higher outside ESS). No differences were found in athletics, handball and gymnastics.

(d) *Extra attention and provisions after the age of 18 years (after leaving the ESS)*

Secondary education in Flanders is compulsory until the age of 18. At this age, athletes move from secondary to higher education or engage in employment. Therefore, athletes

**Table 8.** Percentage of elite athletes that did not receive any of the following services after they left the ESS (+18 years).

Support services	% Not	Coaching services	% Not
More frequent and more intensive training	40.9	Mental coaching (by a sport psychologist)	75.7
Training in a separate group/private training	48.5	Nutrition coaching (by a dietician)	76.1
Extra strength and conditioning training	45.1	Medical support (from specialized doctors)	50.4
Training and competition schedules	39.6	Medical follow-up (medical diary; injuries)	63.2
Better training facilities	52.8	Career advice – career planning	78.2
Participation in international competitions	51.9	Study support (e.g. planning for exams)	71.8
Transport	60.9		
Apparel and sporting equipment	52.4		
Average	49.01	Average	69.23

who went to an ESS were asked whether they were/are still able to make use of different support and coaching services after they had left the ESS. Again, a category ‘not necessary’ was added for athletes who considered these services redundant. Table 8 shows the percentage of athletes who indicated that they were unable to use these services. On average, 49% of the athletes within ESS reported that they could not use any of the support services once having left the ESS and 69% could not use any coaching services.

## Results – outputs

ESS aimed to facilitate the combination of an extensive amount of training with normal secondary education. The ultimate purpose was to increase the number of potential high-level athletes (and in the longer term medals won in important international championships), whilst also enabling them to achieve a diploma in secondary education and take up higher education. Thus, the programme should aid in reducing the dropout rate of athletes from sports or from school. From an output perspective, effectiveness is defined as the extent to which an organization has achieved its goals (Chelladurai 2001). In this study, outputs were measured at two levels: academic performance and sports performance.

### Academic performance

Academic performance was evaluated as whether or not the athletes continued with higher education after the age of 18, when they left the ESS. We chose to investigate this as the main standard of academic achievements since the demands of continuation was considered as one of the main reasons for talented young athletes to drop out (either from sport or education), and was seen as one of the primary goals of ESS at its establishment (Bloso 2010). Furthermore, as previously mentioned, the Ministry of Education commissioned concurrently a separate study to evaluate the specific school context in ESS (Onderwijsinspectie 2011). This study concluded that almost 95% of all students within an ESS attained their diploma in secondary education, and this was significantly higher than mainstream students. That study did not compare talented young athletes within an ESS with athletes outside an ESS in this regard.

When looking at the continuation of athletes into higher education, the results of this research revealed no significant differences between elite athletes within and outside ESS: 79.1 and 74.5%, respectively, continued to higher education after secondary school ( $\chi^2 = 1.289$ ,  $df = 1$ ,  $p = .256$ ). Interestingly, these percentages again appear to be higher for

**Table 9.** Current performance level of elite athletes and highest performance level ever reached by elite athletes within and outside an ESS, according to athletes (bottom-up approach, from surveys).

	Current highest level (%)		Highest level ever reached as an elite athlete (%)	
	ESS ( <i>n</i> = 145)	Outside ESS ( <i>n</i> = 266)	ESS ( <i>n</i> = 399)	Outside ESS ( <i>n</i> = 334)
International top level (top 3)	1.4	2.3	5.5	8.1
International level (world top 12/ European top 8)	9.7	12.0	15.8	19.2
National top level	71.0	74.1	71.4	65.9
Others	17.9	11.7	7.3	7.1

elite athletes compared with mainstream students as identified by the Ministry of Education (Onderwijsinspectie 2011). However, the data also showed that a significantly higher percentage of elite athletes outside ESS (49.7%) than within ESS (34.0%) studied at university level ( $\chi^2 = 9.742$ ,  $df = 2$ ,  $p < .01$ ) and others went to higher education colleges to gain a bachelor's degree.<sup>5</sup>

### **Sporting success**

To evaluate sporting success, the athletes who were still active at the time of the survey were asked what their current level of performance was. At the time of data collection, 38.3% of the athletes within ESS and 15.2% outside ESS were no longer active as elite athletes. These respondents were omitted from this analysis. A distinction was made at three levels: international top three, international top 12 or European top eight and national top level (Table 9). Among the 'others' group in Table 9 were athletes who were not at any of the levels listed and also athletes who were injured at the time of the survey. The results indicated no significant differences in the performance levels between athletes within ESS and outside ESS ( $U = 17,683$ ,  $p = .074$ ,  $r = -0.08$ ).

Similarly, athletes were asked about the highest level that they had ever reached as a senior elite athlete. No significant differences were found between athletes within ESS and outside ESS ( $U = 62,614$ ,  $p = .085$ ,  $r = -0.06$ ).

To check the reliability of the data on sports performance from this bottom-up approach, based on data from the surveys, the analysis was complemented with a top-down analysis of all elite athletes in Flanders (including athletes who did not respond to our questionnaire). All athletes in Flanders who had ever reached the top three or top eight in a European championship, or the top 12 in a world championship event, between 2005 and 2010, were identified, and a check was then made to establish whether they had attended an ESS. This list excluded team sports.

As shown in Table 10, the number of athletes who qualified to participate in a European or world championship event was 33 within ESS and 27 outside ESS. Furthermore, the results reveal that of all the athletes who reached at least top eight level in a European championship or top 12 in a world championship ( $n = 30$ ), a higher proportion had attended an ESS: 19 (63%) within ESS and 11 (37%) outside ESS. In particular, the medal-winning athletes (top three) appeared to be higher in the within ESS group. From a sport-by-sport perspective,

**Table 10.** Number of elite athletes that ever reached the top 3 or top 8/12 during European (EC) and world championships (WC) between 2005 and 2010: a comparison of in ESS and outside ESS (top-down approach).

	ESS	Outside ESS
Top-3 WC	9	2
Top-12 WC	3	6
Top-3 EC	1	0
Top-8 EC	6	3
International qualification	14	16
Total	33	27

**Table 11.** Sport-by-sport overview of the number of elite athletes that ever reached the top 3 or top 8/12 during EC and WC between 2005 and 2010: a comparison within ESS and outside ESS.

	Total students that ever went to ESS	How many years the ESS exists	In ESS		Outside ESS	
			Top-8 (WC)/ Top-12 (WC)	Qualified	Top-8 (WC)/ Top-12 (WC)	Qualified
Athletics	95	12	2	2	2	8
Badminton	20	12	0	1	0	1
Cycling	22	8	1	0	5	2
Gymnastics	58	12	9	2	1	0
Judo	55	12	1	0	0	2
Swimming	31	8	2	2	3	0
Tennis	43	12	2	1	0	0
Ski/snow-board	17	12	2	4	0	2
Triathlon	10	5	0	0	0	0
Fencing	3	3	0	0	0	0
Golf	12	12	0	0	0	0
Table tennis	13	11	0	1	0	1
Taekwondo	7	7	0	1	0	1
Total			19	14	11	16

as presented in Table 11, it appears that most within ESS athletes are gymnasts (nine) and tennis players (two), swimmers (two) and athletics (track and field) contenders (two). Outside ESS, there are five cyclists and three swimmers. Triathlon, fencing and golf are not in contention at all, although it should be taken into account that, with the exception of golf, ESSs have only existed for a few years in these sports.

A different approach to these data appears if we look at the data in the opposite way, namely: at the total number of registered top-level athletes in Flanders within individual sports, taken from Table 2 (ie the numbers registered for the surveys). The findings show that, respectively, 8.5% (33/386) of all athletes within ESS and 8.8% (27/305) outside ESS have ever qualified to participate in a European or world championship. Similarly, 4.9% (19/386) of athletes within ESS and 3.6% (11/305) outside ESS have ever reached the top eight at the European level or the top 12 at the world level.

## Discussion

This paper aimed to evaluate the effectiveness of the elite sport and study programme offered by ESS in Flanders, from a multidimensional perspective. This is relevant, given the high investments made by the Flemish Government to increase the balance during the

dual careers of athletes and to increase the sporting performances on the long term. Elite athletes who have ever attended an ESS were compared with athletes who did not attend an ESS (but were eligible to do so), at the levels of inputs, throughputs and outputs. This adds value to theory development because previous literature focussed mainly on outputs (e.g. Emrich et al. 2009; van Rens, Elling, and Reijgersberg 2012), without taking the processes into account, including services and opportunities offered to young talents at ESS. In terms of outputs (success), there are no straightforward differences between athletes who went to an ESS and those who developed their sports career outside ESS. A similar number of athletes within and outside ESS indicated that they have reached an international top-three or top-eight level. One point of attention should be noted in relation to the sample profile regarding the age of the athletes. As athletes within ESS tend to be significantly younger than those outside ESS, it may be possible that they had not yet reached their top performance at the time of the study. While a top-down approach revealed that of all athletes performing at the top-three level or the top-eight European/top-12 world levels, more athletes had attended an ESS ( $n = 19$ , ie 63%), it appeared that the reason for this difference was mainly related to one sport (nine athletes out of 19), in particular a team performance within the non-Olympic discipline of gymnastics in the 2008 world championships (gold medal). Note that in non-Olympic disciplines, competition is smaller and performances are therefore easier to reach. Outside ESS, sports performance was predominantly higher in cycling (five athletes). This finding also relates to the fact that gymnastics is an early specialization sport where athletes need to train higher amounts at younger ages, compared to a late specialization sport such as cycling (Balyi and Hamilton 2004), and therefore gymnasts need support services earlier. Furthermore, overall performance in Flanders tends generally to be modest as less than 5% of the elite athletes registered (within and outside ESS) reached the top eight at European championship level or the top 12 at world championship level. Policy studies in Flanders also confirm that top-level performances have not increased since 1998 (De Bosscher et al. 2011). Based on the data, the first research question cannot be confirmed or negated: the development of the ESS since 1998 has not led to marked differences or increases in the number of athletes performing at the world/European level, and thus these schools have not contributed to improved international sporting success. This finding is in line with other studies in the Netherlands (van Rens, Elling, and Reijgersberg 2012) and concerning the summer Olympics in Germany (Emrich et al. 2009). For the Flemish Government, this should be considered from the perspective of the investments made (input). Given that 26% of the subsidy for federations in Flanders is related to the ESS (Flemish Government 2012), the development of alternative pathways to success (e.g. decentralized, through supporting local talent clubs and local flexible school arrangements) for potential talent may need to be taken into account. However, the data reveal that this finding cannot be generalized and it requires a sport-by-sport analysis. For example, the ESS system has – in terms of performance – been effective in gymnastics, where gymnasts outside ESS seldom perform at the same levels. In cycling, on the other hand, the relevance of the ESS system is not demonstrated in this study, given the higher performances of athletes from outside the ESS framework. Moreover, athletes perform alike irrespective of their paths (within/outside ESS) in athletics, swimming, judo and (albeit with only a few performances) in badminton, table tennis and taekwondo. In these sports, it can be assumed that an ESS is a helpful tool to combine elite sport and study, but it is not a necessity as athletes outside ESS can also perform to a similar level. This finding about

specificity of sports also endorses Flatau and Emrich's (2013) conclusions in German ESS that not every sport requires cost-intensive facilities and/or equipments and these sports may lend themselves more easily to decentralized training. For example, road cyclists ride on asphalt roads that are public goods and badminton and table tennis can be trained in most sports halls. However, gymnastic pits are expensive or velodromes are only used by elite cyclists, and are highly likely to require centralized training programmes.

In addition, the lack of increasing success should also be seen in the light of the global sporting arms race and elite sport development over time. As competition has increased and more nations plan strategically for success (De Bosscher et al. 2015), athletes train for more hours than previous generations (Jonker et al. 2010; van Bottenburg 2009) and physical and technical performance parameters have evolved over time (Barnes et al. 2014). Consequently,

despite attempts by governments to organise elite sport effectively, the reality is that international sport is a global issue not a national issue. Consequently the rules of the game are dictated by what rival nations and athletes are doing, not on the basis of what an individual nation is doing now compared with what it did in the past. (De Bosscher et al. 2008, 134)

In this respect, in this study, the fact that performances have not increased substantially in some sports should not automatically lead to the conclusion that the ESS are not suitable to facilitate the combination of elite sport and study in secondary education. Moreover, there are many confounding factors influencing sporting success, such as genetic qualities of young talents and their close environment at the micro-level (e.g. parents and friends), organizational and policy factors at the meso-level (e.g. sport clubs, international competitions and scientific research and innovation) and factors at the macro-level (e.g. media, sponsorship, politics, school system, geographic factors and performance culture) (De Bosscher et al. 2006). Therefore, the ESS can obviously not be seen as responsible for the failing success. Nonetheless, the study results prompt a debate and critical reflection about the usefulness of ESS in all sports, in their current organization form, and the efficiency of the investments made.

With regard to the academic output measurement, no difference was found between athletes within and outside an ESS in the number of athletes who continued to higher education. However, the fact that more athletes outside ESS went to university may indicate that athletes within ESS choose to prioritize their sport over their studies to a greater extent than those who chose to remain outside ESS. This can raise questions regarding career opportunities for elite athletes once their athletic careers end. Additional research that examines the impact of dual career support programmes that are promoted by the EU and on the scholastic performances of athletes is needed. Little is known about the consequences of combining elite sport and study at a relatively young age. Some empirical findings in older studies have pointed out that participating in intensive and time-consuming elite sports correlates negatively with scholastic achievement (Coleman 1986; Kaminski 1985). More recent studies, however, have shown that top athletes achieve on average a higher level of education and obtain higher ranking jobs than non-athletes (Conzelmann and Nagel 2003; De Brandt, Wylleman, and De Knop 2015). This is interesting, as this finding possibly relates to the emergence of better systems to combine elite sport and study worldwide. However, a possible selection bias calls for caution when interpreting these results as research has shown that some skills to develop as an elite athlete, such as planning, are competencies that also foster academic development (Jonker et al., 2010). Further research is needed to

establish whether the ESS system hinders elite athletes from further development outside their athletic careers (De Brandt, Wylleman, and De Knop 2015). In addition, it is worth noting at the outset that this research only evaluated athletes' perspectives on policy effectiveness. A further area for consideration is that ESS study coordinators and mainstream teachers, parents or significant others may have different opinions about the performances of student-athletes.

The second research question regards the evaluation of the processes that elite athletes within and outside ESS experienced during talent development. The federations, through their respective ESS, pay considerable attention to the quality of their talent development programmes and their collaboration with ESS to serve potential athletes to as great an extent as possible. The study contends that during the phase of secondary education, athletes outside ESS receive considerably less support in terms of both study and coaching services than athletes within ESS. However, those outside ESS who received extra services often rated such services better, especially with regard to nutritional coaching, medical support and follow-up, psychological coaching and career advice. Furthermore, the study support – for those who received it – was also rated positively. Therefore, it cannot be confirmed that elite athletes who have attended an ESS perceive the processes of combining high-level sports training with study and the corresponding sports programme better than elite athletes who decided not to attend an ESS (but were eligible to do so). This finding may indicate that having the services in place is an important but not a sufficient condition for success. To be successful, an ESS should offer world-class standards and the findings reveal that this was not always perceived as such. Furthermore, the results reveal that coaching expertise was rated positively for both groups but higher outside an ESS (especially in basketball and cycling). This may become an argument for young talents to train with their personal coaches outside ESS. Again, sport-specific analyses show that these findings cannot be generalized for all sports. Training facilities on the other hand were rated generally better within ESS. ESS are able to offer facilities that come close to a world-class level, and this was indicated as a particular problem outside the ESS environment in athletics, handball and swimming.

By relating talent development funding for federations to these ESS, one remarkable finding in the study was that more than half of the athletes received no further support services after leaving the ESS at the age of 18. As most athletes start performing at their highest level after that age, it is important that they continue to have access to services of at least the same standard as during their secondary education at an ESS. This observation lends weight to the increased need for a holistic and long-term approach towards dual careers (Wylleman and Lavallee 2004). These findings should be read in the light of a total athletic career. It is well known that athletes take on average at least 10 years of deliberate training to achieve their potential (Ericsson 2003; Simon and Chase 1973). The data showed that athletes spent on average only 2.8 years in an ESS and had already specialized in their sport for six years before entering the ESS. This means that an ESS is only a small part of a total career and many other factors influence athletic success. For example, as many motor skills are most amenable to training before the age of 12 (Purcell 2005), attention should be paid to talent development at younger ages, when athletes are training in their local sports clubs or starting to engage in their sport. This observation not only prompts a debate about the role of ESS in a total athletic career, but also what constitutes their effectiveness. The starting point of this paper was that effectiveness of elite sport policies is multidimensional. Based on the study results, it is reasonable to accept that output evaluation based on sport

performances is an unrealistic and overly ambitious goal assigned to ESS, as they are only a small element of the whole spectrum of performance determinants in a long-term career. Additionally, in many sports, also the throughput evaluation did not show evidence of being more effective or more positively assessed by the athletes. It is highly likely that elite sport requires an individual approach, tailor-made for each athlete and each sport. For example, late specialization sports (e.g. cycling, athletics and rowing) possibly do not need the ESS services from the age of 12–18 as much as those early specialization sports (e.g. tennis, gymnastics and swimming). This is an interesting finding, as the main principles on which the ESS is based have been copied from other countries (e.g. Australia and the Netherlands) and other sports (in particular tennis and gymnastics) and were implemented for all other sport disciplines in Flanders. After 14 years of policy development, it appears that the ESS is not an evenly effective instrument for all sports. This phenomenon of policy transfer was discussed by Houlihan and Green (2008) as one of the most significant obstacles in the implementation of policies because it is inherently difficult to translate ideas and strategies from one context into another. This conclusion lends theoretical credence to the principles of path dependency in elite sport policy literature that reports how initial policy decisions can determine future policy choices (Houlihan and Green 2008). As the ESS are one of the key elements around which talent development is organized in Flanders, with the uniqueness of central legislation from both ministries of education and sport, these also restrict policy changes and different approaches to talent development. As reported by Houlihan and Green (2008), ‘even where there have been signs of failure, these have often been ignored or interpreted as “evidence” of the need to go even faster and further down the path already set’ (290).

## Notes

1. In general, we use the term ‘federation’ to describe the governing body of a specific sport (similar to National Governing Body (NGB) in the UK and National Sport Organizations (NSOs) in Australia or the USA. The federations manage competitions, rules, regulations and championships for their sport. European countries mostly use ‘federations’. Typical examples of federations include Athletics Canada, the Flemish Gymnastics Federation and the Lawn Tennis Association (also known as British Tennis).
2. According to Field (2013, 532), it is important to report effect sizes with the Mann–Whitney U test to obtain a standardized measure of the size of the effect observed. As SPSS does not calculate an effect size, but converts the test statistics into a *z*-score, the *z*-score was converted into the effect size as follows:  $r = \frac{z}{\sqrt{N}}$ .
3. In addition to the subsidies from Bloso, federations also add their own funding to run the ESS. Furthermore, parents of students pay a fixed amount (per student), ranging from less than 1000 euros for 81% of the students who are not in boarding schools ( $n = 111$ ) to less than 3000 euros per year for 78% of the students who stay in boarding schools ( $n = 215$ ). The prices are sport specific and depend on different factors, such as the number of international competitions that athletes have to participate in. During the interviews, for example, the high performance director indicated that the price in tennis is on average 12,500 euros per year for an U16 athlete. In the surveys, only 1.8% of the athletes outside an ESS indicated that cost was a barrier to them entering the ESS.
4. See Note 2.
5. In Flanders, higher education is organized at two levels. Higher education colleges offer professional bachelors; universities offer an academic bachelor and master education. There are 17 higher education colleges and 6 universities in Flanders.



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