

“Mission impossible”? How a successful female cross-country skier managed a dual career as a professional athlete and medical student

A case study

Max Bergström^{1,2}, Guro Strøm Solli^{2,4}, Øyvind Sandbakk² & Stig Arve Sæther^{3,5}

¹ Department of Health Sciences, Mid Sweden University, Östersund, Sweden; ² Centre for Elite Sports Research, Department of Neuromedicine and Movement Science, Norwegian University of Science and Technology, Trondheim, Norway; ³ Department of Sociology and Political Science, Norwegian University of Science and Technology, Trondheim, Norway; ⁴ Department of Sports Sciences and Physical Education, Nord University, Bodø, Norway

⁵ Author contact <stigarve@ntnu.no>

Abstract

The aim of the present case study is to illuminate the factors contributing to the initiation, maintenance and discontinuation of the dual career of a Norwegian world-class athlete and medicine student. We additionally aimed to highlight contextual factors facilitating and impeding the dual career development. The participant Astrid Uhrenholdt Jacobsen was a Norwegian student-athlete in the 2005–2020 period when she concurrently achieved 10 FIS World Championship medals, one Olympic medal, and 43 World Cup podiums in cross-country skiing. Day-to-day training diary data, study load and progress, performance, and interviews were analysed. In most years, the participant’s annual training volume was c. 800–900 hrs/year. No significant differences in athletic performance were seen between the years with full-time studies, part-time studies, and study breaks. The participant Jacobsen experienced conflicting schedules and a lack of dual career support from stakeholders as the major challenges. Hence, the present single-case study provides unique data on the process and management of a dual career.

Keywords: cross-country skiing; elite sport; endurance training; student-athlete; university studies, dual careers.

Introduction

In August 2007, Astrid Uhrenholdt Jacobsen started her medical studies and, at the same time, joined the senior national team in cross-country skiing. Thirteen years later, she ended both her medical studies and her professional career as a cross-country skier. In this study, we critically analyse her experiences and progress through a challenging dual career pathway.

Following a dual career can facilitate a positively perceived retirement from elite sport (Aquilina, 2013; Torregrosa et al., 2015), whereas being unprepared may result in distress and confusion (Ekengren et al., 2018). Previous studies suggest that dual careers have multiple benefits, since they are perceived by student-athletes as preparing them for the future, giving them transferable skills, and intellectual stimulation as a complement to their physical training (Aquilina, 2013; Tekavc et al., 2015). Preparing a post-athletic career is one of the main motivators of student-athletes (Lupo et al., 2015). Vilanova and Puig (2016) reported that Olympic athletes who undertook dual careers were more satisfied with their post-athletic careers than their peers. Dual careers are also described as health-promoting (i.e., balanced lifestyle, wellbeing and reduced stress), developmental (i.e., transferable life skills and identity), and facilitating expanded social networks and support (Aquilina, 2013). Stambulova et al. (2014) defined the optimal dual career balance as “a combination of sport and studies that helps the student-athletes achieve their educational and athletic goals, live satisfying private lives and maintain their health and wellbeing” (p. 12). Additionally, sustaining a multidimensional life and identity may help some athletes to achieve excellence in sport (Carless and Douglas, 2013). However, previous research on dual career support has shown great variations in academic (i.e., entry requirements, study pace and individualised study plan), sporting (i.e., scholarships, professional support and sport infrastructure) and post-athletic career services (i.e., grants and lifestyle management) among countries, universities, study programmes and even academic staff (Aquilina and Henry, 2010; Lupo et al., 2015).

Background

Student-athletes in individual sports (i.e., endurance) dedicate more time to sport than their team sport counterparts (Condello et al., 2019). For example, case studies of world-class endurance athletes have reported weekly training volumes of 140–190 km a week in track and long-distance running (Tjelta, 2019), and 700–1,000 hours of training per year among cross-country skiers (Solli et al., 2017). In both examples, the training volume was distributed over 11–14 sessions per week. To be able to compete at the highest level, elite athletes are expected to commit full-time to training and competing (Ryba et al., 2015; Wylleman et al., 2004). At the same time, study programmes (i.e., medical studies) can involve 20 hours of scheduled learning sessions every week of which many are obligatory, with additional exams, seminars and full-time hospital practice, and are expected to be the student's main occupation (University of Oslo, 2020). Previous studies identified scheduling (i.e., missing class or training), fatigue/overload (i.e., concentration and capacity), coaches (i.e., lack of flexibility and demanding time commitment), financial struggles (i.e., unable to work), and limited leisure time (i.e., free time and social life) as the main stressors among student-athletes (Condello et al., 2019; Cosh and Tully, 2015). An equal focus on the sport and study domains may therefore be difficult or impossible to manage without compromising other spheres of life (i.e., private life, health and wellbeing) (Gavala-González et al., 2019; Stambulova et al., 2014; Tekavc et al., 2015). Hence, the student-athlete combination is a challenging task to manage, in which the combination of individual and external (i.e., stakeholders') high success expectations creates a potential risk of burnout (Sorkkila et al., 2017). Previous research has found different career priorities among student-athletes (Cartigny et al., 2021); while some individuals tend to devote more time and effort to their sport at the expense of their academic education (Cosh and Tully, 2014; McKenna and Dunstan-Lewis, 2004), others have found that student-athletes focus more on academic success (Gomez et al., 2018). Additionally, Cartigny et al. (2021) complemented previous literature by identifying a third group of student-athletes, trying to balance education and sport equally. Hence, the diversity of student-athletes requires individual approaches from stakeholders (Cartigny et al., 2021). Furthermore, other studies suggested that different national and social contexts influence the

motivations and priorities of student-athletes (i.e., Kuettel et al., 2020; Lupo et al., 2015).

Accordingly, the present study aims to illuminate the factors contributing to the initiation, maintenance and discontinuation of the dual career of a Norwegian world-class athlete and medicine student. We additionally aimed to highlight contextual factors facilitating and impeding the dual career development. In this case, priorities related to high training loads to optimise competition performance were negotiated to maintain study progress in periods with conflicting schedules.

Theoretical approach

The theoretical approaches used in this study are the theory on dual careers with the underlying frameworks of the developmental model of transitions faced by athletes (Wylleman and Lavallee, 2004). Wylleman and Lavallee's (2004) development model illustrates a lifespan perspective on parallel transitions faced by athletes such as athletic (i.e., initiation, development, mastery and discontinuation), psychological (i.e., childhood, adolescence and adulthood), psychosocial (i.e., family and relationships), and academic/vocational (i.e., secondary school, higher education, and vocational training or work). Following a dual career successfully is rarely just a product of student-athletes coping strategies, but also the interplay with stakeholders both on a micro- (i.e., coaches, teachers, peers, dual career -support team, study programme and sport team) and macro levels (i.e., social setting, university administration, sport federation and culture). Successful dual career environments are characterised by integration and coordination of stakeholders, rather than fragmentation and opposition between them, and provide flexible solutions for individual athletes based on a shared dual career philosophy (Henriksen et al., 2020). Based on Henriksen et al.'s (2020) study, the authors concluded, "The HEA stimulates the researcher-practitioner to focus not only on the challenges and coping strategies of the individual student-athletes but to understand and (if necessary) to optimize the entire environment around them" (p. 11). The philosophy of the dual career support team is central and describes an integrated set of key ideas and values about how dual career support should be organised to provide conditions that are as favourable as possible for student-athletes' development, thus ensuring the dual careers' effectiveness as reflected in

the student-athletes' athletic and academic achievements, wellbeing and satisfaction.

Although athletes tend to develop and employ a range of coping strategies inside sport, specific coping strategies related to integrating sport and education appear to be limited. Lack of coping skills and/or strategies may impact performance in both domains (Cosh and Tully, 2015), whereas stress management, goal setting and communication are life skills directly transferable to other areas throughout life (Gould and Carson, 2008). Previous research has also identified the relevance of four dual career-competence factors among student-athletes; dual career-management (i.e., time-efficiency), career planning (i.e., vision of where you want to go in life after your dual career), mental toughness (i.e., emotional regulation), and social intelligence and adaptability (i.e., seeking advice from the right people at the right time) (De Brandt et al., 2017; GEES, 2016; Gomez et al., 2018). Brown et al. (2015) identified several coping strategies among student-athletes, such as seeking social support, goal setting, being proactive and planning ahead, changing personal priorities and communicating with staff. Previous research also suggested that student-athletes have the ability to shift their focus between their commitments based on the time of year (i.e., competition season, exam period and private life events) (Stambulova et al., 2014). However, balancing sport and academic commitments is subjective and varies between different student-athletes (Gomez et al., 2018).

Materials and methods

Ethics statement

The ethics of the study conform to the institutional requirements, and approval for data security and handling was obtained from the Norwegian Centre for Research Data (Ref no. 376569). Prior to data collection, the participant provided written informed consent to voluntarily take part in the study. The participant was informed that she could withdraw from the study at any point in time without providing a reason for doing so. She also signed a written consent to allow the authors to use her name in the publication. The first author, who was performing the interviews, and the last author had no relationship with the participant. The other two authors knew the participant from the cross-country skiing environment, but had no contact with the participant while working on

the study. The first author conducted the first analysis of the interviews to minimise the risk of valuable information being left out as a consequence of the existing relationships between the participant and two of the authors.

Participant

The participant Astrid Uhrenholdt Jacobsen was a professional Norwegian cross-country skier with several podiums from the FIS Ski World Championships (4 individual and 6 team medals), FIS World-Cup races (43 individual podiums) and Olympic Winter Games (1 team medal) (FIS, 2020). During her athletic career, Astrid participated in three Olympic Winter Games (2010, 2014 and 2018) and seven FIS Ski World Championships (2007–2019), and had 258 World Cup starts during the period from 2007 to 2020. The annual number of podiums in international cross-country skiing races (World-Cup, world-Championships and Olympics) is presented in Figure 1. Parallel to her athletic career, the participant was also reaching the end of her medical studies (one year left) at a Norwegian university.

Data collection

In order to explore rich data, or information power (i.e., density and quality of data) as described by Malterud et al. (2016), on how a Norwegian world-class athlete and medicine student initiated, maintained and discontinued a dual career, the present study used a mixed-methods single case study research design. First, with the participant's permission, the researchers gained access to digital training diaries from the Norwegian Olympic Federation and an individualised university study plan, which was also analysed. Additionally, past FIS-race results and world rankings were used to prepare the interview guide. Secondly, data were collected through a semi-structured interview with the participant. This mixed-methods approach was used to complement the individual data of the hard data training load, ECTS and medals, with the subjective data in terms of the interviews. The main aim of combining these data was to get the "objective" overall picture of the hard facts of the performance of the athlete, the progression related to her studies and her yearly training load in relation to her "subjective" perception of her situation while following a dual career.

Registration and systematisation of training data and study load

During the period investigated, the participant logged all day-to-day training data in specifically designed training diaries created by the Norwegian Skiing Federation and the Norwegian Top Sport Centre (Olympiatoppen). To register training time, the participant used the modified session-goal approach (Sylta et al., 2014). The training was registered by allocating times to the different parts of the sessions including the training form, mode and intensity as described in detail by Solli et al. (2017). Registration of the endurance-training intensity was based on the intensity scale developed by the Norwegian Olympic Federation, reported to provide a valid and accurate measurement of the duration and intensity of training by cross-country skiers (Sylta et al., 2014). Study load was registered as the amount of ECTS taken per semester and described as the proportion of full-time studies finished either as medical studies or other university studies.

Interview

The interview guide was developed in line with Patton (2002), where a combined approach of a standardised open-ended interview, and a general interview guide was used as a frame. The interview guide was centred around a) the dual career and prioritisation in the athlete's everyday life, b) how her coaches perceived her dual career, and c) how the dual career impacted her preparations for Olympic Games and World Championships. The guide also included questions on her choice of study programme, and the termination of her athletic career and the start of her medical career. The majority of the interview guide included initial open-ended key questions such as: i) Can you tell me about your life situation when you started your study programme?, ii) Can you describe a typical day?, iii) What drives you to take on a dual career? The flexible semi-structured interview technique gave the participant the opportunity to speak freely about experiences from her own perspective. To enhance information power (Malterud et al., 2016), the interviewer sometimes used illustrative examples, simulations, and prefaces before asking the questions (Patton, 2002). The interviewer could also ask follow-up questions as they arose. The approach of the present study was chosen to enhance the holistic perspective and understanding of the participant's lived experiences.

Data analysis

The data analysis followed the six steps of a thematic analysis as proposed by Braun et al. (2016). First, the first author transcribed, read and re-read the data. Second, the first author generated initial codes by analysing the data in an inductive way and presented them to the last author who acted as a critical friend (Smith and McGannon, 2018). During the third step, the remaining two authors stepped into the analysis process, and we discussed how to structure the findings into higher-order themes in light of the dual career literature and especially Wylleman and Laval-lee's (2004) development model. We paid specific attention to how the athlete perceived the dual career in specific periods, since the athlete in some periods only focused on her sport (non- dual career -phase) and in other periods followed a dual career with both sport and education full time. Fourth, we elaborated on the themes by returning to the raw interview data to clarify certain questions (i.e., her decision to only focus on sport in Olympic seasons). The fifth step was to review and refine the subthemes and final categories. The sixth and last step was highly intertwined in the analysis since we often went back to the categories in the report writing process. An example of this was how we returned to the raw data, to ensure that it was represented in a suitable way in the final categories. The participant in the study was also introduced to the analysis, giving her the opportunity to comment on the interpretations of the results. The final presentation of the findings included the following themes in chronological order of her dual career: 1. The choice of studying, 2. Preparations for Olympic Games and World Championships, 3. Opposing the coaches – end of the study break, and 4. Ending the career – seeing double.

Research rigour

In this paper, rigour is related to the meaningful coherence between the purpose of the study, the procedure and the findings (Tracy, 2010). We build on former research employing this dual career case history by using thematic analysis. Building on Tracy (2010), we have sought to ensure transparency by making a detailed description of the research process. In attempting to do so, we exemplified the procedure and data analysis, and tried to make explicit our pre-conceptions, sensitivity to the environment, and dual role by creating distance and reflecting on our interpretations. The authors are academics with knowledge of Norwegian cross-country

skiing, with two of the authors being previous cross-country skiers and coaches, but all authors had little direct contact with the athlete in this case study. Moreover, we have continually sought to verify and validate the analysis and provide critical interpretations of the data. During the data collection, we discussed various theoretical perspectives, dual role and interpretations with the co-authors, thereby ensuring peer validity (Kvale and Brinkmann, 2009). Triangulation of data sources helped to establish the trustworthiness of the analysis and findings (Patton, 2002). Additionally, ongoing member reflections took place during the present study (Tracy, 2010). Here, the task was to ensure that the descriptions and explanations were rich, generous and abundant (Weick, 2007).

Results

Study progress

Astrid Uhrenholdt Jacobsen, henceforth referred to as Astrid, studied one year of civil engineering (full-time) in 2005. In 2007, she started medical studies after one year of study break. From 2007 to 2013, Astrid studied the first half of the semester with one class, took a study break during the competition season (November-March), and finished the second half during the next semester with another class. Although the annual study pace then was equivalent to 50% (30 ETC in one year), this in practice meant full-time studies during the months at university (i.e., before and after the study break for the competition season). She took a break from the medicine programme from 2013 to 2015. However, from 2014–2015 she studied Health Management full-time for one year at another Norwegian university. In the autumn of 2015, she studied one semester (full-time) of the medicine programme, then took a study break, until resuming full-time studies in the medicine programme from 2018 through her remaining athletic career. The study progress is illustrated in Figure 1.

Training data

In the period from 2005 to 2007, Astrid experienced a rapid increase in her training volume, from 658 to 902 h/year, after which she was training between 810 to 923 h/year from 2007–2013, except for the 2009/2010 season when she trained 630 h/year because of a severe bicycle crash with

subsequent rehabilitation for 11 weeks. From 2013 to 2018, the annual training volume was 880–897 h/year before reducing her training volume to 790 and 730 h/year during her two final seasons, respectively. The detailed description of annual training time divided into various training forms and intensity zones is presented in Figure 1.

The interview – a dual career – the experience told from the athlete

The findings are presented under the categories of the analysis framework mentioned above.

The choice of studying

After attending an ordinary upper secondary school in Oslo, with cross-country skiing being something that she practised in her free time, Astrid started studying civil engineering at a university in another Norwegian city in 2005, which she described as a natural choice. The decision to start the study programme was associated with academic, psychological (i.e., becoming a young adult), psychosocial (i.e., moving to another city) and athletic (increasing demands/time investment) life transitions (see Wylleman and Lavalée, 2004). However, after one year, she discovered that this was not the right education for her. In the same period, a family member was ill, which influenced her to move back home. The following year she focused only on her athletic career, as she stated: “So I had a year off... and then I started to study medicine. I’ve never really enjoyed taking a year off [from studying]” (laughing).

In the winter of 2007, Astrid had her big international breakthrough in cross-country skiing, as she won her first gold medal as a senior athlete in the FIS Ski World Championship. Her success did not impact her decision to start medical studies the following semester, which she described as motivating:

I think it was what I had wanted all along but did not dare from the start. I thought that life might be too short to change your mind several times and do things you don’t enjoy completely. So, I went for what I knew wasn’t going to be easy, but for what I would find very interesting.

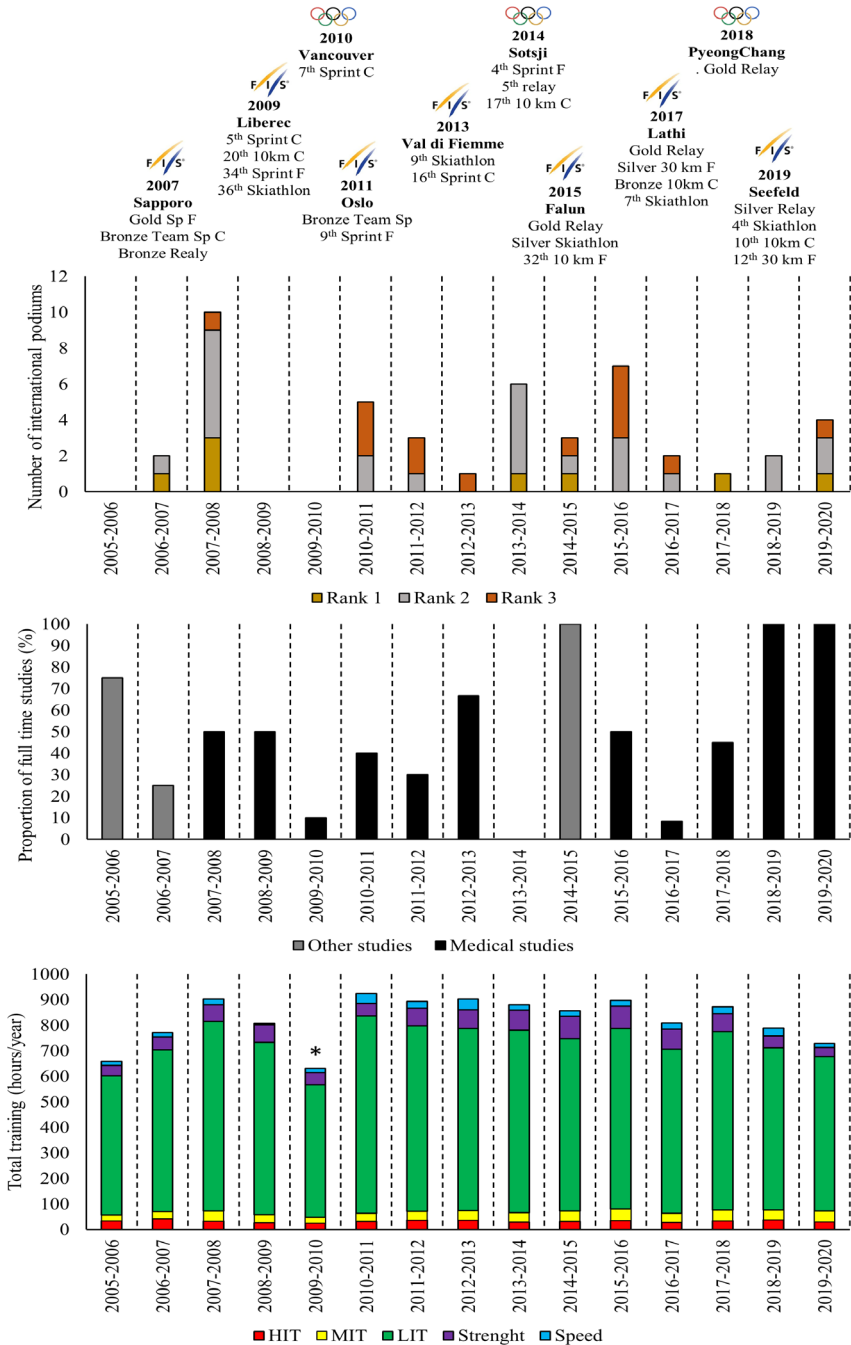


FIGURE 1. AUJ's annual number of podiums in international cross-country skiing races, here study progress and description of annual training time divided into various training forms and intensity zones.

The quote shows how Astrid negotiated her decision to study medicine. For example, she says that she “knew” that it “wasn’t going to be easy”, but still went for it because it was her dream. Even though she had recently experienced her athletic breakthrough, she also argued that there is more to life than doing sports. Further, as she mentions above, she didn’t enjoy “taking a year off”. Hence, the experience from trying the alternative (not doing a dual career) also seems to have affected her decision.

During the first five years of studying medicine (2007–2013), Astrid had an agreement with her university equivalent to part-time studies (study break November-March), made possible since students started the medical programme every six months. Hence, during the off-competition season, she was a full-time student (i.e., April-June, August-October). She had heard about this solution from another elite athlete on the study programme. Apart from this, she had no additional dual career support, with the same requirements as any other student regarding compulsory meetings, practice and exams. Astrid was satisfied with this solution and considered it to be supported by her coaches and the Norwegian Ski Federation, and this meant that she could focus fully on her athletic career during the winter months (i.e., FIS World-Cup races, championships and travelling). However, in 2013, the university removed this opportunity and Astrid was faced with the dilemma to either study full-time or to take a study break:

It was very frustrating because I felt that I could actually master having a dual career this way... Where I managed to focus properly. The problem for me was never lack of time for training or studying, but rather that I had to be at two places at the same time.

Astrid chose the second option, since she experienced a lack of support, understanding and flexibility not only from the university, but also from her coaches and the Ski Federation. The study break lasted four years in total (2013–2015, and 2016–2018), with the exception of 2014–2015 (presented later), where she focused solely on her athletic career. Astrid’s experience turned from satisfaction to frustration with the “system” that had taken this opportunity away from her (see Table 1 for examples of ordinary days according to where she was). Such unexpected events are described by Wylleman et al. (2004) as “non-normative transitions”. Hence, stakeholders’ views on dual career’s and her perceived time con-

TABLE 1. *Typical days for Astrid on days with medical studies and obligatory campus meetings, medical studies on training camps and medical studies without obligatory campus meetings, respectively.*

A typical day with medical studies and obligatory campus meetings	A typical day with medical studies on training camps	A typical day with medical studies without obligatory campus meetings
Wake up	Wake up	Wake up
06:15 am	07:00 am	06:00 am
Breakfast	Breakfast	Breakfast
06:30 am	07:30 am	06:15 am
Training	Training	Studying
08:00 am	09:00 am	07:00 am
Campus meeting	Lunch	Training
10:15 am	11:30 am	08:30 am
Lunch	Physio or other	Lunch
12:00 am	01:00 pm	11:00 am
Travel home from university	Studying	Relaxing
02:00 pm	01:45 pm	11:30 am
Relaxing	Afternoon snack	Studying
02:30 pm	03:30 pm	12:00 am
Afternoon snack, studying, emails	Training	Afternoon snack + studying
03:30 pm	04:40 pm	03:30 pm
Training	Dinner	Relaxing
05:00 pm	06:30 pm	05:00 pm
Dinner	Meeting	Training
07:15 pm	08:00 pm	05:30 pm
Relaxing	Studying 30 minutes before or after dinner	Dinner
07:45 pm		07:30 pm
Studying	Evening snack	Relaxing
08:15 pm	09:30 pm	08:00 pm
Bedtime	Bedtime	Studying
10:00 pm	10:30 pm	08:30 pm

flict forced her to choose one of her commitments, which she describes as:

It was a real setback, really... and because of the system within the Ski Federation and the coaches, the consequence for me was that I had to take a study break for quite a long period of time since it was not an option to be away so much from the national team... I was dependent on them accepting that I could not attend all the team gatherings ...

Being away from the national team was not an option for her, which indicates that even though both commitments were important to her, she prioritised her athletic career:

I did not study during the Sochi-season [Olympic Winter Games in 2014] because we had to prepare ourselves for altitude, which would have been impossible if I had to study in parallel. I would never have had the chance to fulfil all the requirements of meetings on campus, even though I had plenty of time to study.

Preparations for Olympic Games and World Championships

Because of her prioritising her career as a professional athlete, she never studied in the semester before the Olympics but did so in five out of seven World Championships. However, most of her individual medals were won in World Championships. Naturally, other factors also had an impact on her performances in the Olympics. However, when Astrid reflects on her decision not to study, she says that she “was affected” by the opinions of others (i.e., coaches, ski federation and peers) about the importance of the Olympics compared to, for example, World Championships:

It might not have been a good decision when I look back on it now. I think that I was affected by the people around me that it [Olympic Winter Games] was extra important, so I forgot that I might not necessarily perform better ... I mean because of it [taking a study break].

Opposing the coaches – end of the study break

From the autumn semester in 2014 until the summer of 2015, Astrid studied Health Management (not a part of the studies for a medical doc-

tor) at another university as a full-time student. Her experience was that this university provided her with much more flexibility, offering distance learning solutions with less compulsory meetings on campus and the option of taking exams in other places when she had obligations with the national team (i.e., training camps and competitions). She started the programme one year after taking the study break from the medicine programme, without telling her coaches:

I am probably the kind of person who functions better if I can also use my head for something as well. Then I am more satisfied... I felt bored and did not perform very well... So, I found out that: "Oh, here is something that is relevant for me", so I just registered without telling the coaches because I thought that this was not their decision to make.

Astrid had doubts that focusing only on sport enhanced her performance (i.e., in the Olympic Winter Games). However, she felt that taking on both full-time medical studies and an athletic career was not encouraged by what she considered a rigid structure. Hence, the educational and sport systems limited her possibilities for a balanced lifestyle and facilitating wellbeing. In contrast, the one-year study on Health Management did not stop her from winning an individual medal in the FIS Ski World Championship in 2015. Astrid experienced that the coaches had strong opinions about what the athletes should do outside the sport domain and that sport was expected to be prioritised at all times.

After about two years' break from the medical programme (in 2015), Astrid was confronted with a new dilemma as the medical programme at her university was being reformed. This meant that she either had to complete the missing semester full-time or lose all the credits she had taken from 2007 to 2013 (equivalent to 2.5 years of full-time studies). Unwilling to lose what she had gained from her earlier efforts, at this time Astrid chose to become a full-time student parallel to her athletic career in August 2015, as she described: "So, I had to do it full-time and it was quite stressful, I remember, since I did not have the same... How should I express it? Flexibility from the Ski Federation..."

Despite being forced to prioritise one of the arenas, she completed the missing semester during the autumn of 2015, which she experienced as "stressful". Astrid experienced that her dual career was encouraged neither by the Ski Federation and coaches nor by the university. Therefore, she once again took a study break for two years (2016–2018), even though she was motivated for her studies.

However, in January 2018, Astrid's motivation had grown stronger, which resulted in her taking up her studies again. Even though she decided to study full-time, the Ski Federation did not provide her with individual and flexible solutions. Even so, Astrid proceeded with her dual career and also found meaning and motivation in her situation by challenging existing beliefs:

You focus on the things that you can do something with... I find it rather satisfying to prove those who told me all the time that I cannot be a good doctor as long as I am an elite athlete wrong... and there are many people from the sport who think it is impossible to be a good skier if I put so much time into studies and other stuff...

However, she did not reduce the amount of training during the first years of full-time studies (2014–2015 and 2018–2019) compared to other seasons. The training volume was relatively stable (c. 800–900 h/year), regardless of studying full-time, part-time or nothing at all. The next quote might explain why that is:

Cross-country skiing has always been no. 1 for me really, because otherwise there is no point. There is no point in doing elite sports if you are going to down-prioritise it all the time. I have observed that this prioritisation has become more and more difficult the older I have become and because I have learned more about the medical field and think it is exciting too. So, I spend a lot of time on my studies, I do...

Despite always putting her sport career first, she now observed a shift in her priorities as she learned more about the medical field and was reaching the end of her education (one year left in spring 2020). Facing an academic/vocational transition (see Wylleman et al., 2004) might explain her willingness to prioritise both commitments equally. For example, in the season of 2019–2020, Astrid had around 700 hours of training, which is significantly lower compared to previous years.

Ending the career – seeing double

In 2019, the lack of flexibility influenced Astrid to make the decision to take a break from the national team from May until November, even though this meant losing financial support from the Ski Federation. Studying full-time in parallel to her sport career forced Astrid to plan her days many months ahead:

When I first get the study plan, I have to sit and sort out what I should attend, what is extra valuable to attend and what I potentially could skip. Then I have to make my training plan based on that, and because of this my days look very different...

Further, Astrid also adapted the training load in relation to the study load. For example, during the autumn of 2019, she had a week of hospital practice, including night shifts. During this week, she reduced the amount of training. The decision to take a break from the national team had given Astrid more freedom during the preparation period before the competitive season. Hence, just as she was careful with prioritising education, she also had to be focused on her training to make everything work. Her decision to take a break from the national team had given her more self-determination and autonomy because of the increase in flexibility:

Then I was free to plan my days as I wanted and I didn't have to be pulled between the plans from the national team and university. So, the last year was much better for me and I wish that I had found out earlier that taking a break from the national team for half of the year would have been a better solution back then.

However, she was still disappointed with the lack of dual career support from her university, making her take a break from the team, and consequently losing her financial support. Even so, her overall experience of following a dual career was something she did not regret:

There have been times when I have regretted it because it has been practically difficult and backbreaking to have commitments to two places that do not cooperate at all. But overall, I have never regretted it...

Astrid was also thinking about the future of her athletic career. At the time of the interview, she had about one year left of her university degree:

I could continue like this for one more year, but... The last year at medical school might be a bit more demanding and require even more. Additionally, I have the Championship in Obersdorf this winter [FIS Ski World Championship 2021], which means that I have to be away for some time. I have to consider if it's worth going on leave. Then I have to start again. I would lose six months in a way...

When she made the decision to take a break from her studies from 2013–2015 and 2016–2018, one of her arguments had been not being able to be away from the national team. However, now it seemed to be quite the opposite, which indicates a shift in her priorities.

In April 2020, Astrid ended her professional cross-country skiing career thirteen years after winning her first international medal.

Discussion

The present study aimed to illuminate the factors contributing to initiation, maintenance and discontinuation of a dual career of a Norwegian world-class athlete and medicine student. We additionally aimed to highlight contextual factors facilitating and impeding the dual career development. Through the case of a professional female cross-country skier, this study highlights the priorities of an athlete pursuing a dual career as a world-class athlete with an annual training volume of c. 800–900 h/year, combined with medical studies and a lack of dual career support from stakeholders and especially related to conflicting schedules as the major challenges. Even with the intention of the participant to optimise performance in the Olympic seasons, we found no significant differences in athletic performance between the years with full-time studies, part-time studies and study breaks.

In the literature describing the features for success in dual career environments that help the athletes manage a dual career, characteristics such as coherence, integration and coordination between domains and a holistic view of the student-athlete is highlighted (Henriksen et al., 2020). Apart from experiencing a lack of dual career -support, Astrid's dual career could be described as successful in terms of athletic success (i.e., medals and podiums) and that, after some years of incompatibility and study breaks, she was reaching the end of her medical studies. Based on the narrative of the participant, her success is mainly a result of dual career competencies (i.e., De Brandt et al., 2017; GEES, 2016; Gomez et al., 2018). Even though it would be logical to highlight the participant's individual psychosocial skills, such as determination and effort, dual career competencies, coping strategies and life skills needed to succeed as a student-athlete, Astrid's resilience and overcoming of adversity are described in the process along with their impact on her decisions (Wylleman et al., 2004). Yet, Astrid's study breaks may indicate that relying just

on dual career competencies may not be enough to manage a dual career. Therefore, having a minimum of dual career -support/flexibility both at the athletic and academic level (i.e., being allowed to leave the team, changing class every year or distance learning solutions) from at least one stakeholder seems to be crucial. Furthermore, several dual career preconditions (i.e., financial, human and facilities; see Henriksen et al., 2020) likely helped her to succeed in both domains at least indirectly.

An essential finding is that the year Astrid took a break from the national team, she had one of her most successful seasons in the following winter (4th place overall in the FIS World Cup). Considering that there might be other unobserved factors explaining the athletic success, she expressed a greater sense of wellbeing and life balance during this period and she believed this positively influenced her performance. Astrid chose this solution to get the flexibility she needed to succeed in both domains, also adding to her feeling of autonomy according to Self-determination Theory (Ryan and Deci, 2000). In hindsight, the biggest compromise in study quality might have been the relatively long study period (2007–2021), which could have been reduced with dual career support from both her stakeholders on the athletic and academic level (i.e., university, university staff, coaches and Ski Federation). In line with Henriksen et al. (2020), this example shows that successful dual career environments are achievable with some will and effort from stakeholders, in combination with a shared dual career philosophy.

Wylleman et al. (2004) suggest the interactive nature of athletes' life areas and transitions, meaning that, for example, academic transitions may affect sport career in both directions. Astrid's career was associated with many academic transitions (i.e., study breaks), but the athletic career (i.e., mastery) remained relatively stable until the last two years (i.e., leaving the team). It can only be speculated how Astrid's career was affected by these and other non-normative transitions (i.e., injury, illness and psychosocial development) and disappointments (i.e., dual career incompatibility). However, it is worth noticing that previous research has highlighted that sustaining a multidimensional life and identity helps some athletes achieve excellence, and also promotes long-term development and psychosocial wellbeing (Carless and Douglas, 2013). This seems to have been the case for Astrid. Yet, the present study highlights a paradox since she had her best sports results and perceived wellbeing with double commitments, but still experienced a lack of dual career support. If some individuals in a team/class will benefit in both domains (i.e.,

Championship and World Cup results or university grades) from having a dual career, is it not in the interests of the stakeholders (i.e., coaches, sport federation or university) to support such individuals? Here, Wylleman et al.'s (2004) model could be used as a tool to raise awareness about the interdependence of athletes' life areas, and the social context among athletes and their stakeholders, which may help to identify individualised solutions.

Previous research has shown considerable variations in dual career support between socio-cultural contexts, such as countries, universities, study programmes and even academic staff (Aquilina and Henry, 2010; Gavala-González et al., 2019; Kuettel et al., 2020; Lupo et al., 2015). Yet, providing student-athletes with dual career support has been shown to be a double-edged sword for many university administrations. For example, having world-class athletes in the department can be good for image. However, it may also require a higher time investment, more staff and resources, and limit the possibilities to pursue research projects (McKenna and Dunstan-Lewis, 2004). Naturally, universities have to make adjustments and facilitation for most groups of students within the study programme they are attending. Recruiting and educating world-class athletes or other groups such as professional musicians following a dual career would, in many cases, bend and stretch the facilitation of these student groups. This could be challenging because the distance between the decision-makers (i.e., the university board) and the personnel doing the facilitation for dual career students (i.e., academic staff) might, in many cases, be large. In addition, as in Astrid's case, both the national team coaches and the teachers at the university must consider how facilitations for dual career athletes can be achieved in light of the goals stated by the Ski Federation and the university study programme. As for the athlete, the coach or teacher's autonomy is essential for their investment and willingness to facilitate for their athletes or students.

Pursuing a dual career is challenging and requires a balance of investments in two areas. Henriksen et al. (2020) stated that these investments are part of a holistic process; "finding an optimal balance is seen as an ongoing process that never truly ends because the circumstances evolve" (p. 9). The two stakeholders in Astrid's dual career both required that she focus solely or at least mostly on their activity. The obvious challenge for the athlete is the feeling of having to be or trying to be in two places at the same time (Gavala-González et al., 2019). Therefore, the athletes must often find multiple ways to cope with a dual career, in some cases with a

lack of facilitation or support. The reasons for the athletes' choices are influenced in both careers by the stakeholders. For example, in the present study, most of the major career-related decisions and transitions, such as taking a study break or leaving the national team for several months, had, according to the participant, mainly been triggered by external factors (i.e., Olympic Winter Games, reforming the study programme, conflicting schedules and a lack of flexibility). Even so, most of these decisions have been guided by the fact that Astrid, in most cases, prioritised her athletic career. Therefore, it could be debated whether she expected too much of the two domains since they both required full commitment from her, and so, what Astrid described as rigidity might perhaps be necessity. Since Astrid did receive financial support from the Norwegian Ski Federation (when on the national team), it might have been expected that sport was comparable to a full-time profession. For example, previous research has shown that many peers of student-athletes in the sports domain do not take on a dual career (Cosh and Tully, 2015). There is no doubt that Astrid's university expected the study programme to be the student's main occupation (University of Oslo, 2020). Furthermore, this case may also have been new and unique to her stakeholders, which may partly explain why they lacked the understanding to provide appropriate support.

The likelihood of succeeding in following a dual career would also depend on which two careers one decided to combine. Some studies and sports are more time consuming but also require attendance or training camps, meaning that you have a lot of travel days away from home (i.e., cross-country skiing is probably one of the most demanding endurance sports and requires many years of training and commitment to succeed, and medical studies is also one of the most challenging study programmes). In the present case study, the athlete managed to perform at a world-class level over several years, but also managed her medical studies, which could be considered a "mission impossible", making it a unique case. In contrast, most of her teammates on the national team did not take on a dual career (i.e., Solli et al., 2017). From both a sport and education perspective, this combination of dual career would probably not be recommended by either of the two parts. One might even say that it would be problematic for these two stakeholders to support such a difficult combination based on their commitment to focusing entirely on the area they represent. The lack of support might also be a sign of trying to help the athlete to avoid the problematic situation of dealing

with both arenas. The athlete in this study was also fully aware of the challenging combination, as she stated herself. However, the change of class every semester, leading to reduced psychosocial support from study peers (Wylleman et al., 2004), in addition to the lack of support from her coaches and the Ski Federation, likely resulted in low social support for Astrid in both arenas. The experience of social support in both arenas is previously highlighted as important in successful dual career environments (Henriksen et al., 2020).

Even though following a dual career would indicate two equal investments in two separate arenas, earlier research has indicated that, in most cases, one of the arenas is more prioritised compared to the other (Brown et al., 2015). However, while some previous studies suggest that student-athletes devote more time and effort to their sport (Cosh and Tully, 2014; McKenna and Dunstan-Lewis, 2004), others have shown the opposite (Gomez et al., 2018). There are also several cases of athletes trying to balance them equally (Cartigny et al., 2021). In the present study, the athlete clearly expressed that sport had been the highest priority during most of her career except for the two final years (2018–2020). This indicates that the athlete's priorities may shift during a career in relation to life transitions (i.e., mastery/discontinuation, and academic/vocational) (Wylleman et al., 2004).

The Dual Career Development Environment (DCDE) working models developed by Henriksen et al. (2020) indicates that dual career support characterises successful dual career environments both on a micro and macro level, when exploring a successful Danish case of a DCDE. They suggested that future studies should involve more case studies (on both successful and less successful student-athletes) of various types of DCDE to be able to “proceed with a cross-case analysis and create a list of shared features (similar to the successful Athlete Talent Development Environment - ATDE) as a guide to DCDE optimization” (Henriksen et al., 2020, p. 10). Even though the present study did not use the DCDE approach, it could be of some value on the perspective of an individual athlete pursuing a dual career over a long period of time and in different DCDEs. These studies highlight the importance of collaboration between stakeholders in a dual career in order to provide optimal support to the student-athlete. Such a collaboration could provide dual career support through flexible (partly individual) solutions. The athlete in the present study experienced that a different study programme gave her improved flexibility during the 2014–2015 season. From Astrid's per-

spective, she expected a better possibility to prioritise her two commitments more equally, i.e., the opportunity for distance-learning solutions, part-time studies and flexible training planning. This seems to be in line with Kuettel et al.'s (2020) description of the Scandinavian context (i.e., Denmark), which was described as promoting an equal focus more than other national contexts (i.e., Poland and Switzerland). However, analysing the specific social contexts that she was a part of (i.e., cross-country skiing and medical studies) with the dual career -model, both stakeholders demanded higher time investment and effort, and a single focus (i.e., lack of dual career -philosophy), which may differ from other sports and study programmes within the same national culture and macro environment. Based on this, student-athletes should be prepared to discuss and negotiate with stakeholders to find individual solutions to pursuing a dual career.

Limitations

The study design, using the case study of one participant could potentially mean that the analysis would “favour” the participant’s perspective, because of the participant’s opportunity to elaborate and explain her version and interpretation of the situation and the outcome. Accordingly, one limitation of the present study was that Astrid’s stakeholders, i.e., coaches, the Norwegian Ski Federation and the university administration, were not interviewed, which could have generated a richer understanding of the environment that the case study is a part of. In this connection, it is relevant to question how much sport- and study domains actually can adapt to student-athletes without reducing the quality of training/education and the plausibility of providing individual solutions in bigger groups (i.e., team sports and study programmes).

Conclusion

The present study described how a Norwegian cross-country skier managed to combine an athletic career with 800–900 training hours yearly in parallel to her medical studies in a non-supporting dual career environment. Conflicting schedules and being in two places at the same time were found to be the main challenges. Her major career-related decisions

and prioritisations were triggered by external factors and circumstances, both on a micro and macro level in all domains (i.e., sport-, study- and private) (Wylleman et al., 2004). In order to manage the dual career, Astrid described the need to mainly rely on her own coping strategies, life skills and dual career-competences. Yet, considering the relatively long study breaks, this suggests that a minimum of dual career-support is needed to manage a dual career successfully. From the athletic and academic level (Wylleman et al., 2004), more dual career support would have shortened her study time. From the stakeholders', i.e., the Ski Federation's and the university's perspective, such support could undermine a single focus on the area they represent, indicating the challenges in pursuing a dual career. Based on the analysis of Astrid's results as a world-class cross-country skier, her athletic success was not heavily impacted by her choice of following a dual career, but rather enhanced. Given that not all elite athletes benefit sportingly and academically from pursuing a dual career, it is important for stakeholders to find ways to support those who choose this path throughout their career.

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