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Combining School and Sport in Finnish Lower Secondary School:

**The Interplay Among Engagement, Burnout and
Experiences in Student Athletes' Dual Career
Adjustment**





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Cover: Maria-Sofia Soini



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Joni Kuokkanen

Abstract

The current alarming trend in sports shows that many potential future elite athletes opt to dropout of sports before the age of 15 due to insuperable problems in satisfactorily balancing sport with other spheres of life. The absence of national standards has hindered the provision of optimal developmental grounds for talented young athletes to combine school and sport in a dual career (DC) in lower secondary education. Consequently, the Finnish Olympic Committee introduced a three-year Lower Secondary Sports Schools Pilot Project (LSSSPP) on a trial basis in 19 public lower secondary schools between the academic years of 2017 and 2020. Parallel to the three-year pilot project, a longitudinal mixed-methods research project, called Sport and Education for Life, was initiated to evaluate the development of lower secondary sports schools to further improve the DC support programmes at these schools.

The purpose of the present thesis that forms an essential part of the research project was to examine the interplay between school- and sport-related engagement and burnout in shaping adolescent student athletes' (ages 13–15 years) DC adjustment, and the role of social influences and experiences in the adjustment process. The overall aim was addressed in four studies through an exploratory sequential mixed-methods design combining survey data with student athlete and school staff interviews and non-participant observations documented in field notes collected at three time points (T1-T3) during the first two years of lower secondary school. The quantitative approaches utilised in studies I-III involved many students and enable to detect both common and individual trends in engagement and burnout within and between student athletes. The subsequent qualitative approaches used in studies III and IV provided comprehensive evidence regarding the role of experiences and social interactions in the adjustment process.

The objective of study I was to examine the role of social support from significant others and student behavioural engagement in student athletes' ($n = 209$) and regular students' ($n = 156$) school burnout in Grade 7. Using cross-sectional questionnaire data collected over a period of 6 months at two time points (T1 and T2), a series of multigroup structural equation models revealed that mothers, peers and teachers are independent sources of social support that have the potential to strengthen adolescents' behavioural engagement and shield them from burnout through distinct direct and indirect mechanisms. Furthermore, the results indicated that student athletes displayed non-existent group-level differences in school-related burnout and engagement and a higher average level of peer support in comparison to regular students. In summary, the results propose that sports training is not only compatible with schooling, but it also might facilitate well-being in the school context.

The objective of study II was to construct and validate the Sport Engagement Instrument (SpEI) in the Finnish DC context. After an expert panel created the initial SpEI, the instrument was validated with questionnaire data collected from two independent samples ($n_1 = 992$ and $n_2 = 465$) of lower secondary school student athletes aged 13 and 14 years. Using confirmatory factor analyses to compare six different factor structures, the results suggest that 18 items dispersed along four affective engagement factors and either two first-order or one second-order cognitive engagement factor describe the sport engagement phenomenon most accurately in both samples. In essence, study II introduced a new instrument for measuring sport engagement with parallel factors and items matching the well-established way of conceptualising engagement in the school context.

The objective of study III was to examine student athletes' DC adjustment in Finnish lower secondary sport schools at the end of the second academic year (T3) by assessing the interplay among engagement, burnout and experiences through an explanatory sequential mixed-methods approach. The study combined questionnaire data from a sample of 217 (48.9% girls) lower secondary student athletes aged 14 years with follow-up interviews from 19 (10 girls) student athletes. Based on quantitative measures of engagement and burnout in school and sport, a latent profile analysis revealed three distinct profiles. Student athletes belonging to the well-adjusted profile (56.2%) displayed a high level of DC adjustment, whereas adolescents in the reasonably functioning (33.6%) and struggling (10.2%) profiles showed average and low DC adjustment, respectively. The thematic analysis of the interviews in the subsequent qualitative phase suggested that student athletes were generally satisfied with the mix of indirect and direct actions and the support their schools and teachers provided for combining school and sport. However, according to the results, personal resources and coping strategies were crucial assets that enabled student athletes in the well-adjusted profile to maintain low burnout and high current engagement and ambitious future aspirations towards sport. Adolescents in the reasonably functioning and struggling profiles either developed symptoms of burnout or decreased their engagement in sport to compensate for a lack of these skills. In summary, there are differences in student athletes' individual ability to meet personal and environmental demands and they use different social strategies to do so.

The purpose of study IV was to investigate student athletes' engagement in education and sport at the end of the second academic year (T3) utilising interviews with student athletes ($N = 15$) and school staff ($N = 6$) as well as observations documented in field notes. The data were analysed using collaborative qualitative data analysis. The main findings indicated that most student athletes considered school to be a highly important part of their lives and they reported high academic ambitions as well as a higher average level of

academic achievement with less variation in grade point average in comparison to regular students. In contrast, the role and reasons for participating in sport varied greatly among the student athletes, ranging from ambitions of pursuing a professional sporting career to participating in sport for fun, enjoyment and social reasons. In summary, the results suggested that student athletes showed greater variation in their sport engagement than their engagement towards school.

To conclude, the majority of student athletes described a positive person-environment fit characterised by low burnout, high engagement and positive experiences that match those of the environment during the first two years of lower secondary school. However, a lack of congruence between school-level support functions and student athletes' individual needs, abilities and values hindered the DC adjustment for some adolescents. These student athletes adapted their behaviour by making necessary concessions in sport rather than school to match the demands of the environment and preserve their DC. Importantly, the practical efforts in schools and research were closely interlinked in the LSSPP; thus, the results of the present thesis can be applied to improve school curriculum and support services to aid student athletes in their efforts to successfully combine school and sport in lower secondary school.

For example, DC-oriented schools would benefit from annually screening for student athletes' engagement and burnout, especially in sport but also in school, to detect and monitor signs of maladjustment and to develop subsequent interventions. Moreover, schools should consider adding teaching units that promote student athletes' DC management and career planning (e.g. self-regulation, mental toughness and planning skills) and social intelligence (e.g. maintaining interpersonal relationships and making new social contacts). To distinguish applicants who possess the highest potential to maintain an athlete's lifestyle in the future, it would be useful to include interviews along with physical aptitude tests when selecting student athletes for sports classes. In essence, the exchange and promotion of good practices can ultimately contribute to developing DC support programmes in lower secondary schools and support student athletes' well-being as a whole.

Keywords: DC adjustment, mixed-methods, student athletes, burnout, engagement, social interactions, experiences

Abstrakt

Många potentiella elitidrottare lägger av med idrott före 15 års ålder på grund av oöverkomliga problem med att balansera idrott med andra delområden av livet på ett tillfredsställande sätt. I avsaknad av nationella riktlinjer har unga begåvade idrottare inte haft optimala möjligheter att kombinera skola och idrott i en dubbel karriär (DK) inom den grundläggande utbildningen. Inom ramen för Finlands olympiska kommittés 3-åriga pilotprojekt "idrottshögstadieförsök" (LSSSP) skapades idrottsklasser i årskurserna 7-9 vid 19 idrottsprofilerade skolor under läsåren 2017 och 2020. I samband med pilotprojektet genomfördes ett longitudinellt forskningsprojekt, Sport and Education for Life, som ämnade utvärdera skolornas verksamhet för att utveckla mer effektiva sätt att stödja idrottares dubbla karriär i skolkontext.

Syftet med denna avhandling, som utgör en väsentlig del av forskningsprojektet, var att undersöka hur unga idrottare (13-15 år) anpassar sig till DK i samspelet mellan skol- och idrottsrelaterat engagemang och utbrändhet. Vidare analyserades betydelsen av sociala influenser och erfarenheter i anpassningsprocessen. Avhandlingen består av fyra studier och bygger på en mixad metod med explorativ sekventiell design. I avhandlingen kombineras enkätdata, intervjuer med idrottare, lärare och elever och lektionsobservationer som samlats in vid tre tidpunkter (T1-T3) under årskurs 7 och 8. De kvantitativa tillvägagångssätten i studierna I-III möjliggjorde att involvera många deltagare för att identifiera generella och individuella trender i skol- och idrottsrelaterat engagemang och utbrändhet hos idrottande elever. De kvalitativa tillvägagångssätten i studierna III och IV bidrog med mer detaljerad information om hur erfarenheter och sociala interaktioner påverkar anpassningsprocessen.

Studie I fokuserade på relationen mellan socialt stöd, beteendemässigt engagemang och skolutbrändhet hos idrottande elever i idrottsklass (n = 209) och icke idrottande elever i parallellklass (n = 156) i årskurs 7. I studien användes strukturell ekvationsmodellering för att analysera tvärsnittsdata som samlats in med hjälp av frågeformulär vid två tidpunkter (T1 och T2). Resultaten visade att mammor, kamrater och lärare utgjorde oberoende källor av direkt och indirekt socialt stöd med potential att stärka ungdomars beteendemässiga engagemang och skydda mot risken att bli utbränd. Vidare pekade resultaten på icke-signifikanta skillnader i skolutbrändhet och engagemang och en högre genomsnittlig nivå av kamratstöd hos idrottande elever i idrottsklass jämfört med icke-idrottande elever i parallellklass. Enligt resultaten utgör idrottande inte ett hinder för skolgång, utan kan snarare stödja elevers välmående i skolan.

Studie II fokuserade på att skapa och validera ett nytt instrument (the Sport Engagement Instrument – SpEI) ämnat för att mäta idrottsengagemang i en finsk dubbel karriärkontext. Inledningsvis skapade en expertpanel en första version av instrumentet som sedan validerades med hjälp av enkätdata från två oberoende sampel ($n_1 = 992$ and $n_2 = 465$) av idrottare i åldern 13 och 14. Konfirmatorisk faktoranalys användes för att jämföra sex olika faktorstrukturer. Resultaten indikerade att en faktorstruktur med 18 variabler fördelade på fyra affektiva engagemangsfaktorer och antingen två första ordningens eller en andra ordningens kognitiva engagemangsfaktor uppvisade bästa psykometriska egenskaper i båda samplen. Studie II introducerade ett nytt instrument för att mäta idrottsengagemang med faktorer och variabler motsvarande den definition som tidigare använts för att beskriva engagemang i skolkontext.

Studie III fokuserade på hur idrottande elevers förmåga att anpassa sig till DK utformas i samspelet mellan engagemang, utbrändhet och erfarenheter i årskurs 8 (T3). Studien antog en explorativ sekventiell mixad metod design och använde en kombination av enkätdata från 217 (48,9 % flickor) idrottande elever i åldern 14 år och 19 elevintervjuer (10 flickor). Med latent profilanalys, baserat på skol- och idrottsrelaterat engagemang och utbrändhet, identifierades tre profiler. Ungefär hälften (56.2%) av eleverna uppvisade hög grad av anpassning, en tredjedel (33.6%) medelmåttig anpassning och var tionde elev (10.2%) en låg grad av anpassning. En tematisk analys av de efterföljande intervjuerna signalerade att eleverna uppskattade blandningen av indirekta och direkta stödåtgärder som skolan och lärarna erbjöd för deras DK. Resultaten antydde att personliga resurser och strategier spelade en avgörande roll i att elever som tillhörde gruppen med en hög grad av anpassning kunde upprätthålla en hög nivå av engagemang och låg utbrändhet inom idrott och skola. Eleverna som tillhörde profilerna med medelmåttig eller låg grad av anpassning kompenserade en brist på dessa kompetenser genom att utveckla symptom på utbrändhet eller/och att minska sitt idrottsengagemang. Sammantaget antydde resultaten att idrottande elever har varierande sociala strategier och individuell förmåga att bemöta personliga och miljömässiga krav.

Studie IV fokuserade på idrottande elevers skol- och idrottsengagemang i årskurs 8 (T3). Studien utfördes genom att kombinera intervjuer med elever ($N = 15$) och skolpersonal ($N = 6$) samt lektionsobservationer. För analys av studiens insamlade data användes kvalitativ dataanalys. Resultaten indikerade att idrottande elever ansåg att skolan var en mycket viktig del av deras liv, hade höga akademiska ambitioner och högre genomsnittliga betygspoäng med mindre variation i jämförelse med elever i parallellklass. Rollen och skälen till att delta i idrott varierade från ambitioner att satsa på en professionell idrottskarriär till att delta i idrott av nöje, njutning och sociala skäl hos

idrottande elever. Enligt resultaten uppvisade ungdomarna större variation i sitt idrottsengagemang än sitt engagemang i skolan.

Sammantaget belyser resultaten från avhandlingens fyra studier att majoriteten av elever i idrottsklass uppvisar en god balans mellan idrott och skolgång i form av högt engagemang, låg utbrändhet och positiva erfarenheter under grundutbildningens årskurser 7 och 8. För en del ungdomar är omgivningens stöd och personliga förmågor otillräckliga i relation till individuella behov och värderingar. Dessa elever anpassar sitt beteende och gör nödvändiga eftergifter inom idrotten snarare än skolan för att upprätthålla sin DK. I projektet idrottshögstadiet försök (LSSSPP) var skolornas dagliga verksamhet och forskning nära sammanlänkade. Därmed kan resultaten av denna avhandling användas för att utveckla skolans läroplan och stödtjänster som kan hjälpa idrottande elever att framgångsrikt kombinera skola och idrott i grundskolans årskurser 7-9.

Exempelvis kunde screening för engagemang och utbrändhet i skola och idrott ordnas varje år för att upptäcka tecken på missanpassning vid ett tidigt skede. Dessutom bör skolor överväga att lägga till undervisningsinnehåll som främjar idrottande elevers förmåga att planera och hantera sin dubbla karriär (t.ex. självreglering, mental seghet och planeringsförmåga) och social intelligens (t.ex. att upprätthålla och skapa nya sociala kontakter). För att särskilja sökande som har den högsta potentialen att upprätthålla en idrottares livsstil i framtiden, skulle det vara skäl att införa intervjuer tillsammans med fysiska lämplighetstest som en del av urvalsproven för idrottsklasser. Att uppmuntra utbyte av bästa praxis och främja spridning av dem kan bidra till att utveckla idrottsprofilerade skolors stödprogram och i slutändan stödja idrottsstudenters välbefinnande som helhet.

Nyckelord: DK anpassning, mixade metoder, idrottande elever, utbrändhet, engagemang, sociala interaktioner, erfarenheter

List of Original Publications

Study I:

Kuokkanen, J., Romar, J-E., Hirvensalo, M. (2021). An examination of the relationships among social Support, behavioral Engagement, and school Burnout among adolescent student athletes and regular students. (Submitted).

Study II:

Kuokkanen, J., Virtanen, T., Hirvensalo, M., & Romar, J. E. (2021). The reliability and validity of the sport engagement instrument in the Finnish dual career context. *International Journal of Sport and Exercise Psychology*, 1-23. <https://doi.org/10.1080/1612197X.2021.1979074>

Study III:

Kuokkanen, J., Romar, J. E., & Hirvensalo, M. (2021). Toward adjustment profiles for lower secondary student-athletes in the Finnish dual career context: A mixed-methods approach. *Psychology of Sport and Exercise*, 58, 102065. <https://doi.org/10.1016/j.psychsport.2021.102065>

Study IV:

Romar, J. E., Källberg, C., Huuhka, V., & Kuokkanen, J. (2021). The dual commitment of student athletes in lower secondary schools in Finland. *Kinesiology Slovenica*, 27(1), 135-152.

Author Contribution

Joni Kuokkanen is the first and corresponding author of studies I–III and co-author of study IV that are included in this doctoral thesis. Kuokkanen was responsible for all the analyses and all parts of the text in studies I–III and contributed to collecting data and writing study IV. The first three manuscripts were written under the supervision of Associate Professor Jan-Erik Romar and Professor Emerita Mirja Hirvensalo, with Senior Lecturer Tuomo Virtanen providing valuable help with the analyses and text in study II. The original publications have been reproduced with the permission of the copyright holders.

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List of abbreviations

Dual career development environment (DCDE)

Dual career entourage (DCE)

Finnish Olympic Committee (FOC)

Grade Point Average (GPA)

Lower Secondary Sports Schools Pilot Project (LSSSPP)

Socioeconomic status (SES)

Sport engagement instrument (SpEI)

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1. Introduction

1.1. Introducing the concept of dual career

The European Commission White Paper on Sport highlighted that a majority of European citizens participate in sporting activities on a regular basis; thus, sport has substantial societal and economic value in Europe (European Commission, 2007). Participation in youth sports programmes is generally beneficial for academic, psychological and behavioural functioning (Fredricks & Eccles, 2006, 2010; Meier et al., 2018). As adolescents can choose from among a range of sports programmes with different characteristics, the specific developmental outcomes differ depending on the context and the design of the sports programme (Fraser-Thomas et al., 2005). As the requirements of sport intensify, the interest in detecting efficient ways to support athletes' attempts to maintain a dual career (DC) and in developing environments that facilitate this goal have increased significantly after the release of the *EU Guidelines on Dual Careers of Athletes* in 2012 (European Commission, 2012). According to the guidelines, a DC in sport consists of:

The requirement for athletes to successfully initiate, develop and finalise an elite sporting career as part of a lifelong career, in combination with the pursuit of education and/or work as well as other domains which are of importance at different stages of life, such as taking up a role in society, ensuring a satisfactory income, developing an identity and a partner relationship (p. 6).

As this definition indicates, a DC can last up to 20 years or more. For adolescent athletes, a DC involves a combination of academic and sporting pursuits. Moreover, adolescent athletes who combine full-time studies with competitive sport in an educational setting are typically considered to be student athletes. The present thesis focuses on adolescent student athletes in lower secondary schools.

Sport participation provides opportunities for accumulating rich experiences and information beyond sport-specific skills that are essential in developing personal values, interests, extended social networks, confidence and coping strategies that are vital for short- and long-term success and well-being in life (Brewer & Petitpas, 2017; Ronkainen et al., 2021). Furthermore, the skills learned in sport may be transferable to the educational domain and provide student athletes with better preparedness for the post-sport life and increase the opportunity for employability after the sports career (Torregrosa et al., 2015). A continuous parallel investment in school and sport from adolescence to adulthood helps the individual endure occasional DC problems and smooths the

transition among the different stages of the DC (Brown et al., 2015; Ryba et al., 2017; Torregrosa et al., 2015). However, maintaining a high level of engagement in school and sport has also been recognised as a demanding endeavour, with progressively increasing demands in school and sport together with decreasing time for private life possibly outweighing the benefits (Wylleman et al., 2013). Therefore, student athletes show varying degrees of conflict and compatibility in incorporating school or work and sport as part of their daily life and psychological well-being during different stages of the DC (Cartigny et al., 2021). The early years of the development stage in sports (ages 13–15 years) align with lower secondary school, and thus, school and sport are two interlaced contexts in which adolescent student athletes spend the majority of their waking hours (Wylleman & Lavalley, 2004). Adolescents must constantly ponder how to divide their effort and time between these two important spheres of life (Stambulova et al., 2015). For the majority of adolescents, the time invested in sports comes with low returns, including a high uncertainty of a future athletic career and other personal costs (Stambulova et al., 2021). The current alarming trend shows that many potential future elite athletes opt to dropout of sports before the age of 15 years (Kokko & Martin, 2019) or might develop symptoms of school and sport burnout while trying to maintain their DC (Sorkkila et al., 2017, 2020). Being a student athlete essentially means adjusting to being an elite athlete and student and overcoming related DC challenges and demands, which are counterbalanced by personal and environmental resources (De Brandt et al., 2017; Guidotti et al., 2015; Linnér et al., 2019).

The challenges and demands student athletes face and the resources they possess vary according to stage of their athletic career and the environment in which they operate (Li & Sum, 2017). DC adjustment denotes an individual's psychological need or desire to modify his/her personal attributes to match the conditions in an environment; this understanding of DC adjustment is at the core of the present thesis (American Psychological Association, 2015). In the present thesis, engagement, burnout and experiences represent crucial factors of DC adjustment. Engagement symbolises a positive indicator of adjustment encompassing a broad range of behaviours and attitudes related to students' attraction to and investment in learning and classroom and after-school activities (Salmela-Aro et al., 2021). Burnout is conceptualised as a tridimensional construct, including feelings of cynicism, inadequacy and exhaustion, as a student or athlete (Sorkkila et al., 2017, 2020); thus, it is treated as a negative indicator of DC adjustment.

Adolescents' personal and environmental experiences influence the dynamics of DC adjustment in positive or negative ways (Stambulova & Wylleman, 2019). Personal experiences encompass an individual's resources, skills and attitudes

(e.g. self-discipline, resilience, work ethic and the skill to set and monitor goals) can facilitate student athletes' well-being (Stambulova et al., 2015) and engagement (Brown et al., 2015), but they also aggravate stress and burnout (Sorkkila et al., 2020) and conflict with DC pursuits (Li & Sum, 2017). Adding environmental experiences allows one to account for adjustment as a social process affected by direct and combined social interactions with members of an athlete's DC entourage (DCE; i.e. parents, peers, coaches and teachers) together with interconnections among these actors at the school level as well as the indirect effect of the overarching social and organisational levels (Morris et al., 2021; Stambulova & Wylleman, 2019). Based on these perspectives, this thesis examines student athlete DC adjustment in lower secondary school as an interplay between the individual and the characteristics of the environment that involve engagement, burnout, experiences and social interactions.

1.2. Supporting student athletes DC in the school context

Student athletes themselves are key in the adjustment process; however, a supportive environment is a necessity that allows them to keep up their DC engagement and well-being in the long run (Stambulova & Wylleman, 2019). Therefore, developing purposeful DC development environments (DCDEs) that provide talented student athletes with practical and structural support and aids in their pursuit of educational and athletic dreams has been a top priority in many European countries (Morris et al., 2021). These DCDEs are characterised as entire environments that differ in terms of structure, processes and philosophy from the micro to the macro level (Storm et al., 2021). The Nordic countries form a coherent sociocultural context characterised by common economic strength and societal welfare at the macro level (Henriksen et al., 2020; Linnér et al., 2020). A cornerstone of the Finnish DC philosophy is that every athlete is expected to attain a degree from an upper secondary or vocational school (Finnish Olympic Committee, 2020). Simultaneously, athletes are seen as instruments for the country to achieve international sport success (Küttel et al., 2020). Given the high dropout rate from sport, especially during the last two academic years of lower secondary school and the commonness of burnout among upper secondary student athletes, the Finnish Olympic Committee (FOC) launched a 3-year Lower Secondary Sports Schools Pilot Project (LSSSPP) from the academic years 2017 to 2020 (Finnish Olympic Committee, 2017). The lower secondary schools accredited for the project committed to providing a context for talented student athletes, with extended opportunities for sports training during school days, and teaching essential life skills needed for adjusting to increasing demands in sport and education during later stages of the athlete's career. As such, the schools provide a valuable plus to the Finnish national

network of specifically developed upper secondary sports schools (ages 16 to 19 years) and athlete-friendly institutions of higher education (see Nikander et al., 2021, for review).

The current thesis constitutes an essential part of a larger research corroboration formed in conjunction with the LSSSPP, with the aim of collecting information from the schools participating in the LSSSPP and producing evidence-based knowledge that will contribute to the development of a national school-based DC model for lower secondary schools. Philosophically, the current thesis adheres to the ideology of pragmatism (Giacobbi et al., 2005), which postulates that identifying and addressing socially situated problems can provide insights that can be applied to improve school curriculum and support services to aid student athletes to successfully combine school and sport in lower secondary school. As research and practice are naturally interlaced in the LSSSPP, this thesis strives to understand student athlete adjustment as a cultural and contextual phenomenon (Stambulova & Ryba, 2014) and provide insights with the potential to facilitate a society with the healthy and dynamic young people essential for our future economic and social well-being.

1.3 Aim and research questions

The purpose of the research for the present thesis was to examine the interplay between school- and sport-related engagement and burnout in shaping adolescent student athletes' DC adjustment during the first two years of lower secondary school, and the role of social influences and experiences in the adjustment process. Using data collected in conjunction with the Finnish LSSSPP, the research had the following objectives pertaining to the overall aim:

1. How are school- and sport-related engagement and burnout associated among adolescent student athletes (studies I–III)?
2. How are social interactions associated with student athletes' engagement and burnout in school and sport (studies I–IV)?
3. How can experiences explain student athletes' engagement and burnout in school and sport (studies III–IV)?

1.4. Earlier studies and research gaps – from athletic career research to DC research in the European context

It is important to note that a wealth of global DC research has been conducted on various continents, including North America (Yukhymenko-Lescroat, 2018), Oceania (Cosh & Tully, 2015), Africa (Tshube & Feltz, 2015) and Asia (Sum et al., 2017). As the most relevant for the current thesis, the focus of this chapter lies on identifying relevant earlier studies and research gaps in the European DC context. European DC research has evolved from older athlete career research

(Stambulova, 2016; Stambulova & Ryba, 2014). The first notions of DC in research papers date back to 2007, when the term was first introduced in the European Commission White Paper on Sport (European Commission, 2007). The first systematic literature review summarising the findings of European DC research, encompassing 49 scientific contributions published from 2007–2014 (Guidotti et al., 2015), evidenced an emerging research area with unconsolidated terminology and methodological challenges revolving mainly around individual, interpersonal, social/organisational and the political aspects of the DC. A broader subsequent interest witnessed in study of athletes' careers from multidisciplinary DC perspectives can arguably be traced back to policy actions at the EU level (Henry, 2013). Documents such as the EU Guidelines on Dual Career of Athletes (European Commission, 2012) induced a top-down approach, which yielded a bottom-up response in the form of contextualised and culturally informed DC research (Stambulova & Ryba, 2014). Consequently, ongoing back and forth communication and interactions among key stakeholders (e.g. researchers, practitioners and policymakers) has produced a shared body of DC knowledge (e.g. common values and beliefs) that provides grounds for understanding each other but also informs a historically constructed European DC discourse (Guidotti et al., 2015).

In more recent papers, the collected evidence of a state-of-the art review (Stambulova & Wylleman, 2019) including nine review papers and 42 quantitative and qualitative peer-reviewed DC articles from 2015–2018 suggests that the term DC has been well established, encompassing nuanced multidisciplinary research focusing on various individual and environmental aspects of athletes' DCs. A general approach in DC research has been to examine student athlete development and well-being from a holistic lifespan perspective (Wylleman & Lavallee, 2004), with many studies rooted especially in the holistic athletic career model (Wylleman et al., 2013). Within this framework, student athletes are recognised as whole persons who go through specific stages and normative transitions in psychological, athletic, academic/vocational, psychosocial and financial development during their DC. The EU Guidelines on Dual Careers of Athletes underline that student athletes' DCs can be divided into primary, secondary/upper secondary and higher education stages (European Commission, 2012). The majority of current studies focus on student athletes in upper secondary and higher education (Stambulova & Wylleman, 2019), while the lower secondary level has been largely overlooked in previous research.

The release of the *Psychology of Sport and Exercise* special issue 'Dual Career Development and Transitions' edited by Stambulova and Wylleman (2015) including 13 peer-reviewed papers precipitated an extensive research interest, especially in the psychological aspects of athletes' DCs. Subsequently, DC

engagement is a popular topic within this field of research that has been examined from different conceptual and methodological perspectives, including career paths, motivation and identity (Ekengren et al., 2020; Franck & Stambulova, 2018; Lupo et al., 2017a; Ramos et al., 2017; Ronkainen et al., 2016a, 2016b). Studies utilising a quantitative approach have focused on recognising cross-sectional patterns of DC motivation (Healy et al., 2016; Kerstajn & Topič, 2017), longitudinal career trajectories (Ramos et al., 2017), identity development (Moazami-Goodarzi et al., 2020) and future career aspirations (Aunola et al., 2018). Recently, several new quantitative instruments for measuring DC identity and motivation have also been developed (Lupo et al., 2017b; Stambulova et al., 2015). An increasing number of qualitative studies have provided a more diverse approach towards DC engagement by exploring current career construction styles and future DC ambitions (Ronkainen & Ryba, 2018; Ryba et al., 2017), pathways and transitions from a retrospective and longitudinal perspective (Ekengren et al., 2020; Franck & Stambulova, 2018) and group-level differences distinguishing among different phases of the DC (Ramos et al., 2017), gender (Kerstajn & Topič, 2017) and level of competition (Lupo et al., 2017). Other studies have applied person-oriented methods to identify individual patterns of engagement within subpopulations of student athletes (Cartigny et al., 2019; Moazami-Goodarzi et al., 2020; Torregrosa et al., 2015). Given that engagement has been approached from a variety of theoretical and philosophical starting points, the collated DC research seems to disagree on how to measure and define the concept. Consequently, study II, which is discussed in this thesis, introduced a new instrument for measuring sport engagement with parallel factors and items matching the well-established way of conceptualising engagement in the school context.

Another line of psychological DC research, which is thin in evidence but is constantly growing, relates to student athletes' health and well-being (Ronkainen & Ryba, 2018; Sallen et al., 2018; Sorkkila et al., 2017). Earlier research has examined student athletes' physical and psychological health in relation to injuries, physical stress, fatigue and depression (Armstrong et al., 2015; Brand et al., 2013; Putukian, 2016; Sorkkila et al., 2019). Regarding well-being, a growing number of studies have focused on athlete burnout from different perspectives (for a review, see Gustafsson et al., 2011, 2017). The research covers theoretical conceptualisations, instrument development work and descriptions of the symptoms, antecedents and consequences of athlete burnout. More recently, the concept of athlete burnout has expanded to the DC context through a new instrument paving the way for measuring sport burnout with similar items and dimensions (i.e. exhaustion, cynicism and inadequacy) as school burnout (Salmela-Aro et al., 2009; Sorkkila et al., 2017). The instrument

has been used in a number of studies in a Finnish longitudinal mixed-methods research project (Ryba et al., 2016) to study the cross-sectional and longitudinal co-developmental dynamics of school and sport burnout (Sorkkila et al., 2018, 2020). Furthermore, individual factors, including success expectations, achievement goals and resilience (Sorkkila et al., 2018, 2019) and environmental factors encompassing parental expectations, affection and control (Aunola et al., 2018; Sorkkila et al., 2017) have been identified as antecedents of school and sport burnout. A limited number of studies have also examined consequences and engagement in relation to DC burnout (Baron-Thienne & Alfermann, 2015; Gledhill & Harwood, 2015). The collated state-of-the-art review of Stambulova and Wylleman (2019) accentuated the need for more research on well-being, especially among student athletes who are at the beginning of their DC. Studies II and III discussed in the present thesis aimed to bridge this gap.

The academic domain has been identified as a crucial part of athletes' psychological development but has attracted substantially less research interest than the sports domain. However, the number of qualitative and quantitative studies addressing student athletes' functioning in the academic domain has been steadily increasing (Storm & Eske, 2021). A qualitative study drawing on interviews with 15 to 19-year-old Danish football talents, showed that talents living far away from school and the sport club reported a significantly lower set of exam results than their fellow students living in the vicinity of these environments (Christensen & Sorensen, 2009). In quantitative studies, simple statistical procedures have been used to compare student athletes and regular students in terms of test scores (Nielsen & Olesen, 2014) and GPA (Storm & Eske, 2021) and assessed differences within or among groups of talented athletes in perceived academic difficulties and satisfaction with GPA (Jonker et al., 2009) or actual GPA (Moazami-Goodarzi et al., 2020). Other studies have focused on assessing school burnout (Sorkkila et al., 2018, 2019), motivation (Healy et al., 2016) and identity development across different ages and competitive levels (Lupo et al., 2017a; Stambulova et al., 2015). In sum, student athletes' academic adjustment has been examined mainly through uniform measures of academic achievement or by analysis of means in various adjustment variables. The studies by Storm and Eske (2021) and Nielsen and Olesen (2014) are among the few that have included regular students as a control group to isolate the effect of pursuing a sport career in parallel with school. Research coming from the school context has established cross-sectional and longitudinal connections among burnout, engagement and social interactions (Salmela-Aro, 2017; Salmela-Aro et al., 2016; Salmela-Aro & Upadaya, 2014; Virtanen et al., 2018). Consequently, study I referred to in the present thesis aimed to provide a more nuanced perspective on school adjustment by assessing the interplay among engagement,

burnout and school-related support among student athletes and regular students.

A myriad of research has addressed student athletes' experiences during different stages of their DC (for a review, see Li & Sum, 2017), with major themes revolving around demands, barriers and resources (Brown et al., 2015; Debois et al., 2015; De Brandt et al., 2018; Linnér et al., 2019; De Subijana et al., 2015). Research has shown that student athletes face concurrent demands in sport, school and leisure time in the form of challenges and stressors (Kristiansen 2017; Stambulova & Wylleman, 2019) and personal barriers such as injuries, lack of motivation, burnout and exams that conflict with crucial competitive phases in sport (Perez-Rivases et al., 2020; Sorkkila et al., 2020) as well as time management issues and problems finding time for family and friends (Burlot et al., 2018; De Subijana et al., 2015). Personal resources including resiliency, self-discipline, work ethic, ability to monitor and set short- and long-term goals and interpersonal skills have been shown to be crucial in counterbalancing DC demands and barriers in sport, studies and social and private life (Brown et al., 2015; Debois et al., 2015; Linnér et al., 2019; Sorkkila et al., 2019). In more recent studies, these personal resources have been merged into four groups of coping strategies: DC management and career planning, emotional awareness, social intelligence and adaptability that are essential for managing a DC (De Brandt et al., 2017, 2018; Perez-Rivases et al., 2020). The combined results of studies suggest that personal demands, barriers, resources and coping strategies are central elements of one's DC experience (Li & Sum, 2017), which jointly affect well-being and opportunities to maintain a parallel engagement in sport and school (Stambulova et al., 2015). However, a limited number of studies have coupled experiences with burnout or engagement (Sorkkila et al., 2020) during the development stage of the DC, and studies III and IV discussed in this thesis aimed to fill this gap.

Student athletes' DC is commonly recognised as a social process heavily dependent on the environment (Morris et al., 2021). To date, research has mainly considered factors related to the psychosocial level of athletes' development (i.e. micro-level interactions with peers, parents, coaches and teachers) using the holistic athletic career model as a theoretical backdrop (Stambulova & Wylleman, 2019; Wylleman et al., 2013). Studies targeting interactions at the micro level have focused on assessing the role, competencies and methods of student athlete's DC entourage (DCE; e.g. coaches, teachers, parents and peers) in facilitating their DC development (Defruyt et al., 2019; Knight et al., 2018; Kristiansen, 2017; Tekavc, 2015; Tessitore et al., 2021; Wylleman et al., 2017) and wellbeing (Sorkkila et al., 2020, 2017). Another popular area of investigation relates to the combined efforts of significant others in helping student athletes

overcome structural and practical barriers and demands within a particular DCDE or career assistance programme (De Subijana et al., 2015; Henriksen et al., 2020; Korhonen et al., 2020; Stambulova et al., 2021) and identifying differences and common support features occurring at different environmental levels of DCDEs within a specific country (Cartigny & Morris, 2020; Nikander et al., 2021) and more generally across Europe (Morris et al., 2021; Storm et al., 2021). Earlier research has also covered broader policy and legislative issues and cultural aspects and norms in relation to student athletes' sociocultural adaptation (Aquilina & Henry, 2010; Stambulova & Ryba, 2014). The combined message of the prior research is that student athletes' DC adjustment is context-specific, as each DC environment differs in characteristics, structural solutions and philosophy. Furthermore, the relative importance, direction (i.e. negative or positive) and accessibility of each specific source of support seem to depend largely on the type of sport, age of athlete and context (Brown et al., 2015; Geranosova & Ronkainen, 2015; Tessitore et al., 2021). Consequently, the unique and combined role of members of an athlete's DCE and broader social interactions within the DCDE in student athlete adjustment was assessed from different perspectives in studies I–IV.

2. Defining central concepts in relation to DC adjustment

2.1 Adjustment

Adjustment can be defined as a psychological process characterised by a need or desire to modify attitudes, behaviours or both to match the conditions of the physical and social environment or changing conditions (American Psychological Association, 2015). Adjustment has been depicted as an achievement as well as a continuous process. Adjustment as an achievement means the efficiency with which an individual can function in a specific environment or circumstances. Even though adolescents might adjust to one scenario, they can simultaneously struggle to adjust to another related but independent scenario (Lazarus, 1976). Considering that school functions as a context with responsibility for supporting adolescents' school and sport endeavours in a socially responsible way in the Nordic countries (Küttel et al., 2020), it seems reasonable to examine adjustment in relation to school and sport separately but also in parallel (i.e. DC adjustment). Viewing adjustment as a process entails accepting that humans face endless separate and unrelated challenges in different spheres of life (Lazarus, 1976). In addition to adapting their mode of behaviour or attitudes, adolescents can also adjust to contextual and situational demands through affective responses or by maintaining and developing supportive social relationships (Carey, 2009).

A well-adjusted individual demonstrates appropriate social and psychological responses to satisfy situational and contextual needs (American Psychological Association, 2015). Adjustment is critical to mental health and well-being, and prolonged difficulties in producing sufficient behavioural, affective or social responses to meet personal needs and environmental demands may provoke negative outcomes such as anxiety, depression and burnout (Bisson & Sakhuja, 2006; Salmela-Aro & Upadaya, 2014). Although there is no clear consensus on how to conceptualise and measure adjustment (Carey, 2009), the achievement and process perspectives suggest considering contextual, individual and environmental factors crucial for the subjects of research. In line with relevant research on adolescent adjustment (Carey, 2009; Li & Sum, 2017; Linnér et al., 2019; Salmela-Aro, 2017; Sorkkila et al., 2020; Virtanen et al., 2018), I chose engagement, burnout and experiences as the factors representing DC adjustment for the purposes of this thesis. These factors allowed for conceptualising DC adjustment as a multidimensional construct encompassing a mix of positive and negative personal and environmental features relevant for adolescent adjustment. Furthermore, the way in which

these factors are used and combined to examine adjustment in the four studies that are the foundation of the present thesis, advocates for portraying adjustment as an achievement (outcome) and process. School burnout and sport engagement are defined as outcomes in studies I and II; thus, they essentially represent the efficiency with which an individual can function in a specific environment. Studies III and IV, in turn, examine school- and sport-related burnout and engagement in parallel, which indicates adolescents' ability to adjust to two related but independent environments. Considering that adolescent student athletes constantly need to adapt their behaviour (engagement) to meet situational and contextual demands, and accounting for experiences and social influences, in studies I-IV are congruent with the process perspective, suggesting that adjustment is also about solving endless challenges in different spheres of life.

2.2 School and sport engagement

Engagement is positively associated with academic success, competencies, skills, positive emotions and life satisfaction that allow for successful management of present school endeavours and smooth educational transitions (Salmela-Aro & Upadyaya, 2014; Upadyaya & Salmela-Aro, 2013; Wang & Holcombe, 2010), whereas low school engagement gradually increases the risk of problem behaviours and school dropout (Wang & Fredricks, 2014). Sport engagement has been linked to benefits such as increased enjoyment, flow (Hodge et al., 2009) and motivation and willingness to overcome obstacles to continue in sport (Scanlan et al., 2016; Weiss et al., 2010) but might also serve as a protective factor against burnout (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007) and dropout of sports (Fraser-Thomas et al., 2008). Consequently, sport (Hastie et al., 2020) and school (Fredricks et al., 2004) engagement are treated as two context-specific positive indicators of DC adjustment in the present work.

School engagement encompasses a broad range of factors related to students' attraction to and investment in learning and school life (Skinner et al., 2008). The concept can be viewed at the individual level through assessing various aspects of student involvement in classroom and after-school activities but also more broadly at the school level or in education in general (Salmela-Aro et al., 2021). This thesis focuses mainly on individual engagement at the classroom level. Although a recent scoping review (Hastie et al., 2020) revealed that sport engagement has attracted much less research attention than the corresponding construct in the school context, the construct has been operationalised similarly in both contexts. In previous studies, the term, sport commitment, occurs most frequently in the literature to describe an individual's engagement in sport. Sport

commitment refers to an individual's determination and desire to persist and continue his/her involvement in sport over time (Scanlan et al., 1993). Engagement has been theorised as a multidimensional construct consisting of two, three or four interrelated dimensions reflecting an individuals' attitudes, beliefs and behaviours towards learning or sport (Appleton et al., 2008; Fredricks et al., 2004; Hastie et al., 2020; Lonsdale, Hodge, & Jackson, 2007). For the purpose of this thesis, commitment and engagement are used interchangeably. Two distinct tridimensional approaches are especially prominent in the literature, sometimes even labelled the European (Lonsdale, Hodge, & Jackson, 2007; Schaufeli et al. 2002; Upadyaya & Salmela-Aro, 2013) and the North American (Fredricks et al., 2004) approaches for defining the concept of engagement.

In the European approach originating from the work context (Schaufeli et al., 2002), engagement has usually been defined along either three or four dimensions, including absorption, dedication and vigour (Guillén & Martínez-Alvarado, 2014; Upadyaya & Salmela-Aro, 2013), with confidence occasionally added as the fourth dimension in the sport context (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007). In the North American approach, engagement is constructed along behavioural, cognitive and affective subtypes of engagement (Fredricks et al., 2004). Both ways of conceptualising engagement have attracted wide empirical interest, especially in the school context, and possess arguably essential features with the potential to predict a wide range of relevant outcomes relating to psychological and academic well-being and functioning (Appleton et al., 2008; Salmela-Aro & Upadyaya, 2014; Tuominen-Soini & Salmela-Aro, 2014; Wang & Fredricks, 2014). An increasing number of European studies have utilised the North American approach (Virtanen et al., 2014, 2016), which allows for operationalising engagement as a malleable, developing and multidimensional construct consisting of three interrelated but separate dimensions. These three dimensions jointly echo an individual's observable behaviours and unobservable positive feelings and cognitions towards sport and school and interactions with social companions that result in an enduring participation in learning activities and sport (Fredricks et al., 2004; Hastie et al., 2020). From these perspectives, engagement is conceptualised in accordance with the North American approach in the present thesis.

The behavioural dimension of engagement encompasses tangible and directly observable ways in which students participate in an activity by asking questions and paying attention to relevant activities as well as their focus and persistence towards context-related tasks. Behavioural engagement also includes positive conduct in the form of adhering to the norms and rules of the classroom/sport club, attending the school/sport and engaging in curricular and extracurricular

school-related activities such as school clubs and sport (Finn, 1989; Fredricks et al., 2004; Hastie et al., 2020). The cognitive dimension of engagement taps into internal processes within the individual, such as the use of learning strategies and self-regulation skills, but also involves the effort to understand knowledge that is crucial for present school work or sport participation and attitudes towards future learning in school and sport (Appleton et al., 2006, 2008; Hastie et al., 2020).

Affective engagement includes an individual's positive interactions with teachers, peers, parents and coaches but also identification with and belongingness towards school or sport in general (Appleton et al., 2006; Fredricks et al., 2004; Hastie et al., 2020). This thesis focuses on adolescents' social interactions with significant others that affect adolescents' development through complex and multifaceted mechanisms (Henriksson et al., 2020; Kim et al., 2018; Knight et al., 2018; Tessitore et al., 2021). More precisely, structural features (i.e. number and type of interpersonal relationships; Sheridan et al., 2014) and different forms of functional support including perceived and received emotional (e.g. empathy, love, trust and caring), tangible (e.g. tutoring) and informational (e.g. advice and suggestions) and appraisal (e.g. information that is crucial for self-evaluation; Beets et al., 2006; Liu et al., 2016) affect the degree to which adolescents engage in social behaviour and adapt to the immediate social environment (Crick & Dodge, 1994). Therefore, affective engagement is conceptualised as a composite of different structural and functional forms of social interactions with significant others in the present thesis.

2.3 School and sport burnout

School burnout has been associated with decreased academic and cognitive performance (May et al., 2015), depressive symptoms (Salmela-Aro et al., 2009), and truancy (Virtanen et al., 2018), which can initially affect adolescent's willingness to study further after completing their compulsory education (Bask & Salmela-Aro, 2013), and subsequently heighten the risk of school dropout and being marginalised in society (Tuominen-Soini & Salmela-Aro, 2013). Sport-related burnout has also been related to depression and low self-esteem as well as declining motivation and engagement in a similar manner to the corresponding construct in the school context (Gustafsson et al., 2011, 2017, 2018; Sorkkila et al., 2017). Sport and school burnout are essentially two related but separate symptoms (Salmela-Aro et al., 2009; Sorkkila et al., 2017), and thus, they are defined as negative indicators of DC adjustment in the present thesis.

Students are expected to attend classes, prepare assignments and take tests during and after school hours (Bask & Salmela-Aro, 2013; Noh et al., 2013),

whereas athletes take part in practice and competitions as part of their athletic career (Sorkkila et al., 2018). Consequently, adolescents involved in competitive sport in parallel with education are predisposed to develop sport and school burnout (Sorkkila et al., 2017). A mismatch between resources and demands can cause individuals to develop symptoms of school or sport burnout that vary in severity from minor stress to major burnout (Mäkikangas & Kinnunen, 2016; Salmela-Aro & Upadyaya, 2014; Sorkkila et al., 2020). Burnout is a global phenomenon occurring in different educational (Lee et al., 2013; Salmela-Aro & Tuominen-Soini, 2013) and sport (Gustafsson et al., 2017) contexts and across various educational (Salmela-Aro et al., 2008) and competitive (Giusti et al., 2020) levels in sport. In line with previous research (Salmela-Aro et al., 2009; Sorkkila et al., 2017), burnout is conceptualised as a tridimensional construct consisting of a cynical and distal attitude towards schoolwork or sport in general, reduced sense of competence and achievement resulting in feelings of inadequacy as a student or athlete, and exhaustion due to being unable to live up to school or sport demands in the present thesis. Changes within three subdimensions (exhaustion, cynicism and inadequacy) of burnout have been shown to be stable over time in school (Parker & Salmela-Aro, 2011) and sport (Sorkkila et al., 2018). Research assessing the interrelationships of the three dimensions of school burnout has shown that high initial levels of exhaustion induce subsequent development of inadequacy, whereas cynicism seems to develop somewhere between exhaustion and inadequacy (Kim et al., 2015; Parker & Salmela-Aro, 2011). School-related exhaustion has also been suggested to lead to subsequent sport-related exhaustion (Sorkkila et al., 2018).

2.4 DC experiences

Adolescents' personal and environmental experiences influence the dynamics of DC adjustment (Stambulova & Wylleman, 2019). A wide array of personal and environmental experiences has been associated with student athletes' DC adjustment (Guidotti et al., 2015; Stambulova et al., 2015). Resources, knowledge, skills and attitudes have been used interchangeably to describe student athletes' personal DC experience (Brown et al., 2015; Cosh & Tully, 2014; Debois et al., 2015; Kristiansen, 2017; Li & Sum, 2017; Ronkainen & Ryba, 2018; Sorkkila et al., 2020). Enjoyment, fun, self-discipline, resilience, commitment and dedication to excelling, work ethic, the skill to set and monitor goals and capacity to make personal decisions and take responsibility for one's own actions are examples of personal resources. Career planning, mental toughness and social intelligence and adaptability represent essential skills and attitudes for successfully managing a DC (De Brandt et al., 2017, 2018). These experiences are essential for coping with and overcoming psychological, athletic, academic and

psychosocial demands, challenges and barriers, such as limited time for friends outside of sport and social life, fatigue, injuries, identity conflicts (Kristiansen, 2017; Li & Sum, 2017; Ronkainen & Ryba, 2018), stress and burnout (Sorkkila et al., 2020), and conflicts in balancing educational and athletic careers (Li & Sum, 2017). They also affect student athletes' future aspirations and optimism towards their DC (Ryba et al., 2017; Sorkkila et al., 2018), satisfaction and persistence (Stambulova et al., 2015), career construction and psychosocial functioning (Ryba et al., 2017), and dedication and desire for learning in school and sport (Brown et al., 2015). Although engagement and burnout essentially reflect an individual's state of mind, they fundamentally develop in response to the perceived balance between personal and environmental stressors and resources. Therefore, for the purpose of the present thesis, stressors and resources, skills and attitudes are conceptualised as personal experiences that are crucial for adolescents' DC engagement and burnout.

Student athletes' experiences of interactions with different layers of the environment essentially relate to an individual's lifeworld and subjective perception of a phenomenon (Giri, 2019). Environmental experiences encompass direct and combined social interactions with coaches, teachers, parents and peers can promote positive DC experiences by providing understanding and encouragement, reinforcing openness and empowering communication (Geranosova & Ronkainen, 2015; Kiens & Larsen, 2021; Sorkkila et al., 2020; Storm et al., 2021). However, they also subject student athletes to social pressure and success expectations contributing negatively to the DC experience (Sorkkila et al., 2017; Stambulova et al., 2015). The amount of flexibility in study programmes in meeting the training demands and rules of attending classes (Brown et al., 2015; Cosh & Tully, 2014), existence or lack of mentorship programmes (Pink et al., 2018), distance between training and educational settings (Aquilina, 2013) and level of sport support and opportunities for long distance learning (Fuchs et al., 2016) reflect the dedication and integration of efforts among key stakeholders in local DC networks. It also indicate the way in which broader national academic and sport and college systems are able to support student athletes (Cartigny & Morris, 2020; Henriksen et al., 2020). Similarly, student athletes' experiences of the availability or lack of opportunities, social and structural conditions and coordination of philosophy in overarching macro environments can positively or negatively impact their mental health, well-being and DC development (Pink et al., 2018; Ryba et al., 2015; Stambulova et al., 2020; Tekavc et al., 2015). In this thesis, environmental experiences are conceptualised by adapting the view that interactions, ranging from micro- to macro-levels in sport, school and leisure time, can present as resources, demands or barriers (Stambulova & Wylleman,

2019; Stambulova et al., 2020). Taken together, the above-mentioned personal and environmental experiences have the potential to contribute to student athletes' DC adjustment in positive or negative ways.

2.5 The linkage of engagement, burnout and experiences

The interrelationship between engagement and burnout is the subject of intense debate. In different contexts, including work, school and sport (Guillén & Martínez-Alvarado, 2014; Lonsdale, Hodge, & Jackson, 2007; Parker & Salmela-Aro, 2011; Salmela-Aro et al., 2009; Schaufeli et al., 2002), burnout and engagement have been shown to represent two separate processes that are both strongly and negatively correlated. The causal relationship between these two is yet to be determined, as some research suggests that previous burnout predicts lower levels of subsequent school engagement (e.g. Salmela-Aro & Upadaya, 2014), but behavioural and cognitive engagement has also been found to be negatively and independently linked to global burnout and depressive symptoms (Morgan et al., 2013; Virtanen et al., 2016). A growing number of prominent DC studies have used burnout as an indicator of adolescent student athletes' well-being (for a review, see Stambulova & Wylleman, 2019), along with extensive research showing the pivotal role of engagement in adolescent school adjustment (Salmela-Aro et al., 2021). These findings indicate the need for treating burnout and engagement as independent indicators of adjustment.

Interestingly, students' perceptions of care and support from significant others (i.e. affective engagement) have been shown to protect adolescents against school burnout (Virtanen et al., 2018), whereas teammate (DeFreese & Smith, 2013), coach and parental (Sheridan et al., 2014) support efforts are directly associated with lower levels of sport burnout. However, given that students' school engagement manifests flexibly in response to social support (Lawson & Lawson, 2013), positive feelings about relationships with significant others (i.e. affective engagement) is commonly operationalised as a facilitator (Rodríguez-Fernández et al., 2016; Virtanen et al., 2019) rather than an indicator of engagement. According to this view, affective engagement is positively and directly related to subsequent cognitive and behavioural engagement (Quin, 2017) and indirectly to negative adjustment (i.e. truancy) through behavioural engagement (Virtanen et al., 2014). Cognitive engagement, in turn, has the potential to affect academic adjustment through both direct and indirect effects via behavioural engagement (Li et al., 2010). Moreover, other studies highlighted that social interactions can generally be considered a resource that facilitates adolescents' psychological, academic and athletic well-being and development (Estell & Perdue, 2013; Knight et al., 2018). Depending on the type of social interactions, negative attitudes and demands posed by members of an athlete's

DCE may also have the opposite effect on well-being and behaviour (Korhonen et al., 2020; Sorkkila et al., 2017).

An individual's resources and coping strategies are crucial for adjustment during the development phase of the DC (De Brandt et al., 2017; Li & Sum, 2017). Although national DC guidelines generally provide a plan of action that can be implemented by actors in DC support networks, a lack of understanding and awareness among actual DCE present a restricting factor in meeting the obligations of the national recommendations (Ryan et al., 2017). In practice, student athletes often feel simultaneously direct supportive and pressuring influences and indirect expectation demands from central stakeholders within DC environments (Defruyt et al., 2020). Furthermore, the environment itself and different forms of functional support provided by representatives of DCE may steer an individual's current engagement and future decisions regarding their DC (Aunola et al., 2018; Geraniosova & Ronkainen, 2015). Despite supportive efforts generally outweighing negative social influences in an environment as a whole (Storm et al., 2021), student athletes' challenges vary according to the structure of the DCDE (Linnér et al., 2019; Morris et al., 2020). It has been suggested that a negative balance between demands and resources might lead to burnout, while personal and environmental resources outweighing demands may facilitate engagement (Salmela-Aro et al., 2017). DC-engaged student athletes usually have better personal preparedness to manage their DC than their counterparts, showing unidimensional engagement towards sport (Brewer & Petitpas, 2017). Moreover, engagement has been shown to possess the potential to directly predict future performance and mediate the relationship between performance barriers and resources, whereas burnout can neither function as a mediator nor predict future performance (Salanova et al., 2010). In previous research (Cartigny et al., 2021; Debois et al., 2015; Sorkkila et al., 2020; Stambulova et al., 2015), personal and environmental experiences have been commonly conceptualised as facilitators of engagement and burnout.

3. Approaching adjustment from different perspectives

In the preceding section, DC adjustment was presented as a multidimensional construct including engagement, burnout and experiences, and their interrelationships were discussed. However, the achievement and process perspectives on adjustment encourage considering individual characteristics and development in relation to contextual and environmental aspects (Lazarus, 1976). During the developmental stage, adolescents show individual changes in behaviour, emotions and social functioning while attempting to adjust to an environment (Goossens, 2006). Thus, adjustment is discussed from a multitude of perspectives in the following sections.

3.1 Developmental-contextual approach

One interest of the present thesis is to examine the interplay between the individual and environmental dynamics underlying student athletes and regular students' burnout in the school context. Despite a slight general downward trend during the last decade, Finnish lower secondary students generally show excellent academic performance in international comparisons in education (Leino et al., 2018). However, school adjustment is a multifaceted and polarised phenomenon (Salmela-Aro et al., 2016), as students simultaneously report problems in motivation, coping and well-being (Salmela-Aro & Tuominen-Soini, 2013). Finnish national statistics from 2019 revealed that 11.2% of boys and 20.1% of girls experienced school exhaustion in the 8th and 9th grades (Institute for Health and Welfare, 2020a). Roughly 10% of Finnish upper secondary student athletes reported symptoms of school-related burnout (Sorkkila et al., 2017), suggesting that the incidence of burnout is somewhat higher than among regular student boys of the same age and slightly lower than among girls, respectively (Institute for Health and Welfare, 2020a). These results imply that burnout seems to manifest itself differently among distinct groups of students.

Although the majority of Finnish students have reported a high degree of school satisfaction (Institute for Health and Welfare, 2020b; Leino et al., 2018), the years adolescents spend in lower secondary school are generally characterised by waning school engagement (Salmela-Aro et al., 2017; Wang & Eccles, 2012). However, assessing changes in students' behavioural, cognitive and affective engagement separately reveals a more complex picture. Among regular students, effort and involvement in classroom work and discussions (i.e. behavioural engagement) and subjective valuing of school (i.e. cognitive

engagement) peak at the age of 11 years (Li & Lerner, 2011; Wang & Eccles, 2013), and subsequently stay stable or decline moderately over the course of each school year until the end of lower secondary school. For regular students, the ability to plan, organise and participate in learning activities is a valuable resource that has been shown to shield against subsequent school burnout (Morgan et al., 2013). Although the associations between school engagement and burnout have not been studied among student athletes in the school context, there is evidence suggesting that the values and skills learned through sports training are compatible with educational values and may facilitate academic and psychological functioning in the school context (Fredricks & Eccles, 2006, 2010). At high levels of sport participation, the benefits might level off or even subject adolescents to heightened school-related stress and declining educational aspirations (Ryba et al., 2017; Sum et al. 2017).

The quality and relative influence of social support from significant others (i.e. peers, teachers and parents) on adolescents' school adjustment differ among subgroups of students (Wang & Eccles, 2012). Among regular students, peer, parental and teacher involvement and support are related positively to student behavioural and affective school engagement (De Laet et al., 2015; Vollet et al., 2017) and negatively to school-related burnout in general (Kim et al., 2018; Pietarinen et al., 2014; Virtanen et al., 2018). In particular, belonging to a peer group with a high level of engagement and prosocial values predicts school compliance (i.e. behavioural engagement) and a learner's affective connection to significant others in the classroom (Kindermann & Skinner, 2012; Vollet et al., 2017; Wang & Eccles, 2012). In a similar pattern, the composition (i.e. sports peers, school peers and leisure time peers) and the attitudes of the peer group influence whether the peer influence is negative or positive for student athletes' school adjustment (Korhonen et al., 2020). Distinguishing between paternal and maternal support is important, as both sources of support are positively and independently associated with cognitive school engagement, while maternal support also facilitates students' affective satisfaction at school (Ratelle et al., 2017). For student athletes, parents are considered the main source of school-related support, but they must also divide their support between school and sport (Knight et al., 2018). Especially, having a strong affective connection to mothers has been shown to shield student athletes against the development of burnout (Sorkkila et al., 2017). Teachers have a prominent role in facilitating student athletes' school adjustment through providing individualised support to compensate for the absence of classroom teaching due to sport participation (Korhonen et al., 2020), but also in helping them to monitor fatigue and stress and set short- and long-term academic goals (O'Neill et al., 2017).

3.2 Person-oriented approach

Person-oriented approaches are usually utilised to identify diverse homogeneous clusters of individuals with specific characteristics within larger samples (Bergman & Trost, 2006). A growing number of studies have explored the incidence and co-development of school and sport burnout among student athletes in upper secondary school (Sorkkila, Aunola et al., 2017; Sorkkila, Tolvanen et al., 2018; Sorkkila, Tolvanen et al., 2019; Sorkkila et al., 2020). In studies that utilise person-centred approaches, typically three to four distinct profiles can be identified among student athletes based on measures of burnout, including a well-functioning profile with low school and sport burnout, a profile with values slightly above average in school or sport burnout, and one profile characterised by an increased risk of burnout. Three distinct profiles have generally been extracted in studies drawing on measures of engagement: dual engaged student athletes who prioritise sport and education equally, student athletes who focus almost solely on their sporting career and student athletes with changing or undecided engagement towards sport and school (Moazami-Goodarzi, 2020; Ryba et al., 2017; Torregrosa et al., 2015). Shifting attention to the school context, a growing number of studies have used person-oriented methods to identify distinct subgroups of students by combining measures of engagement and burnout in lower secondary school (Virtanen, Lerkkanen et al., 2018), upper secondary school (Salmela-Aro & Upadaya, 2020; Tuominen-Soini & Salmela-Aro, 2014) and tertiary education (Salmela-Aro & Read, 2017). For example, Virtanen, Lerkkanen and colleagues (2018) identified students who showed a combination of high engagement and low burnout (40.6%), average engagement and average burnout (53.9%) and low engagement together with high burnout (5.5%) within a large sample of Finnish lower-secondary school students.

Although engagement and burnout have not been studied in combination in the DC context, other indicators of psychological functioning have been coupled with engagement. In Nordic countries, student athletes are expected to follow a developmental track with hybrid obligations to school and sport (Skrubbeltrang et al., 2016). Generally, focusing on school in parallel with sport facilitates well-being by providing the necessary breathing room to allow for shifting thoughts away from sport (O'Neill et al., 2021; Ryba et al., 2017), whereas an unidimensional athletic engagement might provoke psychological distress due to missing out on exploring occupational or ideological alternatives (Brewer & Petitpas, 2017). However, having personal perfectionistic strivings and success expectations in school and sport might also predispose student athletes to overall burnout (Hill & Curran, 2016; Sorkkila et al., 2017), while parallel

mastery goals in school and sport can result in cynicism and feelings of inadequacy within the same context (Sorkkila et al., 2018). Moreover, dual engaged student athletes are neither a homogenous group in their lifestyle choices (Ryba et al., 2017), stress tolerance and resilience (Sorkkila et al., 2019), nor in their motivational patterns (Gustafsson et al., 2018). Although student athletes have extended opportunities for social interactions due to being involved in two domains simultaneously (Torregrosa et al., 2015), they also need individual support from significant others and institutions to successfully manage their DC (Fuchs et al., 2016; Storm et al., 2021). In essence, student athletes show individual ability and different strategies to adjust to unfavourable personal and environmental conditions (Sorkkila et al., 2020). Some develop burnout as a price for continued participation in sport despite a progressive imbalance between positive and negative experiences (Gustafsson et al., 2008), whereas others might temporarily reduce their engagement in one of the contexts to gain control over their DC (Stambulova et al., 2015). These findings suggest that adjustment is not merely an attribute of the individual but rather mirrors the fit between the individual and the environment (Eccles & Roeser, 2011).

3.3 The role of student background

The collated findings of Stambulova and Wylleman (2019) underlined that DC adjustment could merely reflect pre-existing natural variation within different subpopulations due to individual background characteristics. Research has suggested that gender might explain differences in engagement, burnout and amount of support in the sport (Gayles & Hu, 2009; Isoard-Gautheu et al., 2015; Lupo et al., 2017b; Sheridan et al., 2014) and school contexts (Bask & Salmela-Aro, 2013; Beets et al., 2006; Liu et al., 2016). These studies implied that girls are more likely to suffer from cynicism and report higher levels of satisfaction than boys, and that boys and girls show differences in school-related classmate and teacher support. In the sport context, boys might demonstrate a stronger affective connection to fathers, a higher level of cognitive and behavioural engagement and lower values of cynicism and inadequacy in comparison with girls. Athletes competing at a higher level (Weiss & Aloe, 2019) in individual sports (Chen et al., 2010) and those who spend more time in sport-related activities (Lupo et al., 2017a) are often more affectively, behaviourally and cognitively connected to sport than their counterparts. However, more time spent in sports at a highly competitive level might also predispose athletes to burnout (Gustafsson et al., 2011). In the school context, students who come from families with higher parental socioeconomic status (Meier et al., 2018) and those who report higher prior GPA (Miller et al., 2005) might differ from their

counterparts in terms of engagement and burnout; thus, these background characteristics might explain differences in students' school adjustment (Fredricks & Eccles, 2006, 2010). Previous DC studies have indicated that dual engagement with equal focus on school and sport is generally more common among younger athletes and in individual sports, whereas elite athletes tend to prioritise sport while females focus more on school. In addition, the level of student athletes' DC burnout seems to vary according to GPA, gender, type of sport and level of competition (Aunola et al., 2018; De Subijana et al., 2015; Torregrosa et al., 2015). Therefore, different combinations of gender, type of sport, level of competition, prior academic achievement and parental socioeconomic status were included to control for the possible confounding effect of student athlete background on adjustment in studies I, II and III.

4. Theoretical and philosophical departures for understanding DC adjustment

To illuminate the process of DC adjustment, it is critical to consider the interplay between the features of the individual and those of environment. In the present thesis, the person-environment fit theory and socioecological model serve as theoretical frameworks for depicting the importance of the environment for student athletes' DC. The person-environment fit perspective provides a means for understanding an individual's behaviour in relation to the environment in which the person lives and acts (Eccles & Roeser, 2011). The socioecological systems theory offers a useful framework for examining adolescent adjustment as a multifaceted bidirectional interplay between the individual and five interrelated ecosystems encompassing the microsystem, mesosystem, exosystem, macrosystem and chronosystem (Bronfenbrenner, 1986).

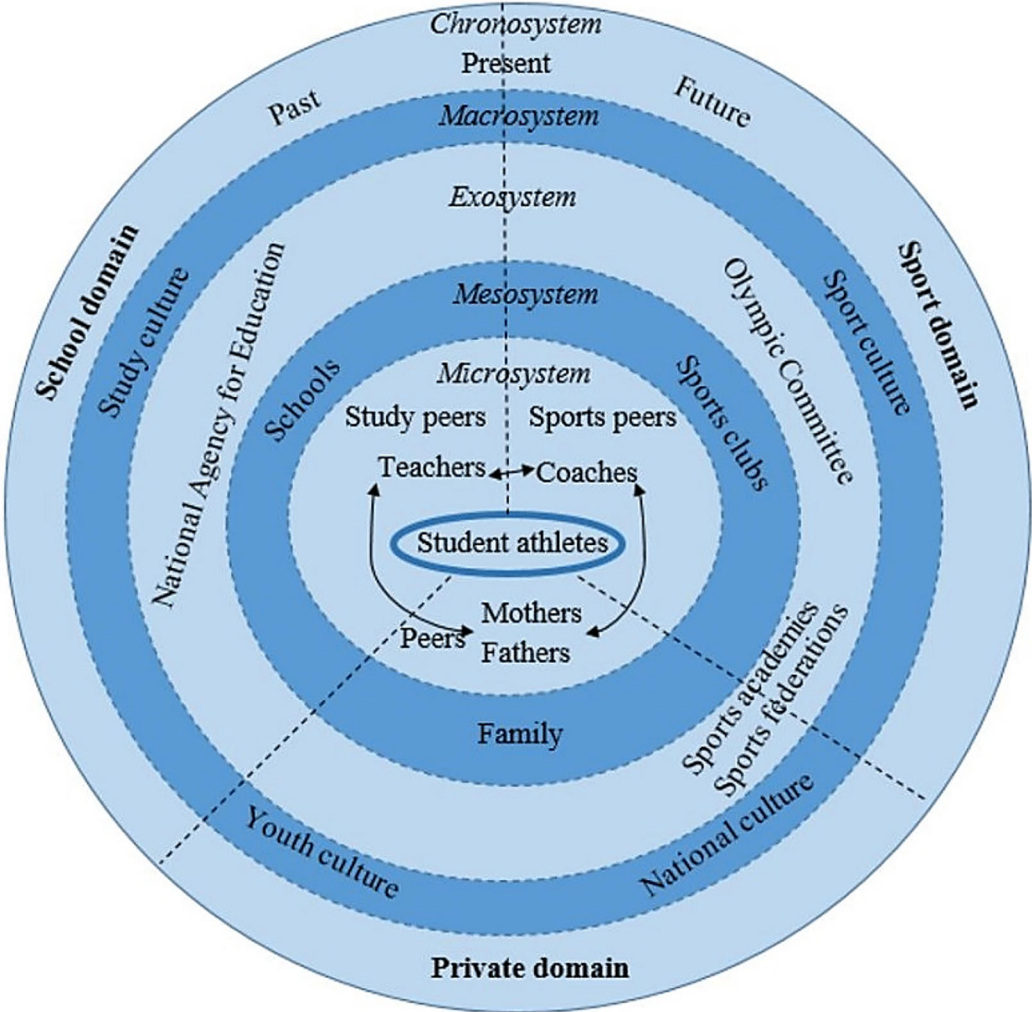
The socioecological framework has been previously modified to the sport context to describe the roles, functions and structures of particular athletic talent development environments having the potential to produce elite-level athletes (Henriksen & Stambulova, 2017; Henriksen et al., 2010). More recently, the framework has been used to portray the functioning and features of DCDEs that have been developed to provide student athletes with fruitful opportunities and intensified support for combining their athletic careers with education or work (Henriksen et al., 2020; Korhonen et al., 2020; Linnér et al., 2020; Morris et al., 2021; Storm et al., 2021). Although DCDEs share a number of common features, each of them is fundamentally unique, reflecting broader sociocultural differences at different environmental layers. Acknowledging that each school enrolled in the LSSSP represents distinct DCDEs with varying potential to nurture adolescents' development, the present thesis introduces the Finnish DCDE model to create a comprehensive picture of the environments involved in the LSSSP and to handle large amounts of data collected as a part of the project. Figure 1 provides a visual presentation of the Finnish DCDE model, with social interactions within the different nested environmental layers in the domains of sport, studies and private life that are essential for adolescent student athletes' adjustment during the development stage of DC.

In the following sections, an extant review of the literature and a thorough description of the two theoretical frameworks provide the rationale for creating the model by explicitly differentiating the interactions between the individual characteristics of the student athletes and the specific functions, components and structure of the distinct environmental layers. The person-environment fit theory focuses mainly on student athletes located at the centre of the

environment, while the socioecological theory allows for incorporating direct interactions in its vicinity (micro- and mesosystems) and more distal indirect interactions within the overarching environment (exo-, macro- and chronosystems) to provide a holistic ecological description of student athletes' DC adjustment.

Figure 1

The Finnish Dual Career Development Environment



Note. Adapted from 'Holistic Approach to Athletic Talent Development Environments: A Successful Sailing Milieu' by K. Henriksen, N. Stambulova and K. K. Roessler, *Psychology of Sport and Exercise*, 11(3), 212-222.

4.1 The person-environment fit theory

The person-environment fit theory suggests that an adolescent's behaviour and well-being are shaped in a reciprocal interaction between personal characteristics and the environment (Eccles & Roeser, 2011). The perceived fit or mismatch of organisational and interpersonal features of a specific context and the attributes of the person (e.g. needs, abilities and values) predict positive or negative changes in well-being and behaviour (Van Vianen, 2018). The fit is related to an individual's developmental stage, with the age of 13-15 years being a time of major physical, psychological and socioemotional growth and developmental changes (Goossens, 2006). The person-environment fit denotes that congruence (or a lack thereof) in one environment is associated with functioning in another environment (Edwards, 2008), with school and sport environments being crucial development contexts for adolescent student athletes (Wylleman et al., 2013). The schools enrolled in the LSSSP provide a mix of schooling and complementary opportunities for sports training to accompany training and competition in the regime of their home sport clubs for Finnish adolescent student athletes (Finnish Olympic Committee, 2020). From this perspective, these lower secondary sports schools represent multilevel developmental environments encompassing interdependent contexts stretching from macro (e.g. national policies) to micro (e.g. educational tasks) environments (Storm et al., 2021).

A positive person-environment fit can appear in two forms (Kristof-Brown et al., 2005). First, supplementary fit is characterised by individual attributes that match those of the environment. Second, complementary fit means that individual attributes are complemented by the environment, but also vice versa. Student athletes show varying individual abilities to balance and optimise their DC (Aquilina, 2013; Stambulova et al., 2015). Autonomy and responsibility are personal resources that enable structuring daily activities and multitasking, while the ability to maintain close relationships with significant others are examples of social skills that are crucial for overcoming barriers and adapting to a DC environment (Eccles & Roeser, 2011; Larsen et al., 2013; Ryba et al., 2017). Adolescent student athletes have individual developmental needs and challenges, and although it is impossible to remove all DC barriers through environmental support, student athletes can be taught how to deal with such barriers (De Subijana et al., 2015). By providing a mix of schooling and sport, lower secondary sport schools create student athletes opportunities for cultivating creative and necessary experiences that are helpful for managing the DC (De Brandt et al., 2018; Linnér et al., 2019), increase their school engagement and learning results (Storm & Enke, 2021) and fulfil their socio-cognitive and

emotional needs to protect them from ill-being (Sorkkila et al., 2020). However, the consistency in the ways schools structure sets of experiences differs in relation to the needs of individual students (Eccles et al., 1993). Indeed, an inconsistency between personal and environmental attributes reduces positive outcomes and leads to differing negative consequences (van Vianen, 2018). Although there is no clear agreement on how to assess the fit–outcome relationship, as a broad range of varying fit measures has been used in differing contexts (van Vianen, 2018), the fit essentially reflects the match between an individual and various levels of their environment (Kristof-Brown et al. 2005). The current DC literature suggests that student athletes are a heterogeneous group and establishes burnout, present engagement and future aspirations as important factors of personal DC adjustment and development (Aunola et al., 2018; Cartigny et al., 2021; Sorkkila et al., 2020).

4.2 The socio ecological framework

According to the socioecological framework (Bronfenbrenner, 1979), student athletes are nested within a series of interconnected environments. The following sections provide a comprehensive description of the mechanism through which efforts within and integration of these efforts between the microsystem (i.e. teachers, coaches, parents and peers) and the mesosystem (i.e. school, sport clubs and sports academies), as well as the broader indirect contextual and cultural interactions among the overarching exosystem (i.e. sports federations, Olympic committee and National agency for education), macrosystem (i.e. study, youth, sports and national culture) and chronosystem (i.e. past, present and future development) environments, affect an individual's DC adjustment.

4.2.1 Microsystem – the role of the DC entourage

The microsystem is the closest environment to the individual, encompassing daily bidirectional communication and social interactions with significant others (Bronfenbrenner, 1979). Although the structure and composition of a student athlete's closest network varies in relation to age and context (Henriksen et al., 2020; Morris et al., 2021; Storm et al., 2021), parents, peers, coaches and teachers are arguably the most central support agents (i.e., entourage) in the microsystem (Stambulova & Wylleman, 2019; Tessitore et al., 2021). They can assist student athletes in multiple ways through recognising needs, anticipating problems and removing barriers in the private, sport and school domains (Debois et al., 2015; Defruyt et al., 2019; Knight et al., 2018).

Family and peers constitute the most influential support providers in the private domain. Early adolescence (12 to 14 years) is generally characterised by increasing peer influence and weakening family ties. However, the multifaceted role of parents as the main providers of tangible, emotional support and informational support is especially important during the development stage of DC (Knight et al., 2018; Li & Sum, 2017). Parents are often the sole economic sponsors of Finnish adolescents' sporting endeavours, as sporting federations and sport federations seldom offer funds to cover equipment, travelling or training costs (Geranosova & Ronkainen, 2015). Furthermore, parental advice and assistance seem to be prominent during the development stage, whereas the support might be more inclined towards emotional support during later stages of the DC (Henriksen et al., 2010, 2020). Importantly, the social dynamics between student athletes and their mothers and fathers differ (Aunola et al. 2018; Sorkkila et al., 2017), with fathers providing informational and economic support in sport and mothers constituting important sources of emotional support inclined more towards school (Holl & Burnett, 2014). Student athletes generally have limited time with friends outside of sport or school in adolescence (Larsen et al., 2013), and thus their role in the adjustment process remains limited. Although peers constitute important sources of emotional support, their support might lead student athletes to ponder whether engaging in the role of an athlete will affect their peer group standing (Gledhill & Harwood, 2015) and thus force them to choose between adapting to the ways of the peer group or ceasing to be a member of the group (Henriksen et al., 2010). Meeting friends and having close interpersonal relationships might have a more prominent role in shifting thoughts from sport demands during later stages of the DC (Henriksen et al., 2020).

The micro-environment in sports involves interactions with coaches and sports peers. Coaches are crucial for DC adjustment, as student athletes often view coaches as their mentors and seek advice from them. Although coaches tend to underline that sport ought to be student athlete's first and school second priority, they also show flexibility and understanding by adjusting training loads to expedite current educational demands (Henriksen et al., 2020; Korhonen et al., 2020). Coaches' leadership behaviour is key in building and actively maintaining an emotionally satisfying and safe relationship to facilitate the quality of the athlete's engagement and experience in school and sport, but their support is usually restricted to informational forms of support (Brown et al., 2015; Taylor & Bruner, 2012). The sports peers' roles and functions in regard to the student athlete's DC adjustment vary according to the number of DC peers in their environment. In environments with many DC engaged sports peers, a positive attitude towards DC engagement is generally facilitated (Henriksen et

al., 2020); however, student athletes might also be pressured to see other athletes train (Korhonen et al., 2020). Thus, in optimal conditions, student athletes share the same classroom with their sport club peers, which allows for socialising and sharing general DC experiences and worries (Larsen et al., 2013), whereas peers who are committed to other sports in the same classroom constitute important sources of informational support, providing opportunities to discuss issues related to sport (Henriksen et al., 2010).

Teachers and study peers (i.e. regular students) are two important but different support providers in the school domain. Teachers are bound by the law to support and aid students with special needs (i.e. student athletes), but they are not always equipped to provide optimal levels of support, and therefore sometimes perceive this as burdening (Korhonen et al., 2020). In practice, teachers have varying capacities to promote adolescents' holistic adjustment (Roorda et al., 2019) and therefore tend to direct their efforts towards maximising student athletes' opportunities for success and supporting future aspirations in school through direct instrumental and specific support behaviours such as flexible timetables and freedom in classwork (Gledhill & Harwood, 2015; Henriksen et al., 2020). As teachers make practical arrangements that allow student athletes opportunities to conveniently engage in sport and school, they also provide a high level of emotional support when adapting their teaching and reacting to specific individual needs and challenges of the DC (Knight et al., 2018). Teachers foster student athletes' independence by encouraging them to take control of their decisions regarding schoolwork (Korhonen et al., 2020). Having study peers outside of sport is important for student athletes' social identity (Larsen et al., 2013), but they have limited time to socialise with these peers. Student athletes' support from school peers is inclined towards emotional support in school-related matters (Storm, Henriksen et al., 2021), and their sports peers' opinions regarding the role of education tend to transmit and spread to other athletes in the group as well (Korhonen et al., 2020).

4.2.2 Mesosystem – integration of efforts among teachers, coaches and parents

A mesosystem can be described as a system of microsystems that comprise the connections among the micro-environments in which the individual is actively involved (Bronfenbrenner, 1979). For student athletes, the mesosystem comprises integration of efforts among representatives from the school, sport and private domains. The collated research shows a capricious pattern of communication and co-operation among parents, teachers and coaches that can

be considered key representatives of the three domains (Küttel et al., 2020; Nikander et al., 2021). More precisely, two different patterns can be identified: divergence and cross-pressure among homes, schools and sport clubs impede negative DC experiences and maladjustment (Storm et al., 2021), whereas parallelism in values and practices and an awareness of DC demands and stressors facilitate student athlete functioning in school and sport (Knight et al., 2018).

Teachers and coaches often have conflicting interests and priorities regarding aspects that centrally affect the everyday life of student athletes (Storm et al., 2021). Coaches' primary interest is to support student athletes in honing their athletic talent and might consider studies as a barrier to sport, while teachers highlight the importance of education and perceive that sport can be a hindrance to education. This might result in tensions between these two, as coaches might perceive that teachers do not appreciate their work but also the opposite being true (Korhonen et al., 2020). Parents are trapped somewhere in the middle, balancing their support between school and sport, while finding it difficult to communicate with teachers and coaches (Harwood et al., 2010; Knight et al., 2018). The divergence in the priorities of homes, school and sport staff might appear to student athletes as they have no say in key decisions regarding their own DCs and that these key social agents have a limited understanding of the demands and lack of interest in their well-being. This experience becomes particularly evident during times of high demands in school, in which case, schools usually adapt to the sport domain to compensate for a lack of integration and coordination (Storm et al., 2021). In fact, some DCDEs have a pronounced strategy that coordination between school and sport works foremost when based on the premises of sport (Henriksen et al., 2010).

Parents have been shown to rely on and gladly transfer the responsibility for adolescent educational and athletic development to sport schools if they perceive that there is a strong and coherent organisational culture and solid agreements between schools and sport clubs (Kristiansen & Houlihan, 2017). Schools organise weekly training sessions under the supervision of coaches with the nature and content of the training approved by the sport clubs. However, a strict condition for participating in training sessions is that student athletes attend classes, while students playing truant from school are not allowed to participate in training sessions at the club. (Henriksen et al., 2010; Larsen et al., 2013.) Well-functioning environments are characterised by a coordinated team of support providers with clear roles, a shared DC philosophy and a will to integrate efforts to promote holistic development and well-being (Storm et al., 2021). The DC entourage often benefits from a coordinator who functions as a link between coaches and teachers in handling practical issues such as how

school is managed while student athletes travel with the club and miss lessons (Henriksen et al., 2020). The need to further develop the interactions among student athletes, coaches and parents to support DC adjustment is evidently a crucial part of future development needs.

4.2.3 Exosystem – integration of efforts among central stakeholders

The exosystem is the third layer of the nested environmental systems (Bronfenbrenner 1979), which affects student athletes' DC adjustment indirectly through opportunities and challenges the structuring of national school and sport systems influence on the underlying micro- and mesosystems (Stambulova et al., 2009, 2020). In countries where top-level sport and education are integrated within the school system (i.e. school sports), they are generally better equipped to support the dual role of students through more refined institutional policies and structural conditions. American colleges and high schools and the British sport system that host school sport are presumably the most well-known examples (Coakley & White, 1992; Kelley et al., 2018). Highlighting the diversity of European DC policies and strategies (Aquilina & Henry, 2010), Morris et al. (2020) identified eight different types of DCDEs within Europe. The Finnish DC context encompasses four different DC environments, including sports-friendly schools, elite sports schools, combined DC systems and national sports programmes.

The interest of this thesis lies in combined DC systems, which are usually embedded within regular educational institutions that work in tandem with sporting bodies to deliver a holistic support package to the individual undertaking the DC (Morris et al., 2020). The Finnish combined DC systems are state sponsored (Aquilina & Henry, 2010), with the FOC endorsing formal arrangements and communication among National Olympic Committee schools, sport clubs, sport federations, and local sport academies to ensure that student athletes are guaranteed appropriate support and flexibility in pursuing their DC (Nikander et al., 2021). Currently, local sport academies that fall under the jurisdiction of the FOC coordinate a centralised network of 30 National Olympic Committee schools at the upper secondary level (vocational and general, ages 16 to 19 years; Finnish Olympic Committee, 2020). These schools are basically regular schools with sport classes; thus, their curriculum must be approved by the National Agency for Education, which is the highest decision-making body in the school domain. Finnish student athletes compete for sport clubs that are governed by sport federations and co-operate with local sport academies. The coordination of efforts between national agencies and regional actors in sport establish the foundation for student athletes' opportunities to combine school and sport at the underlying school level.

To extend the existing network of upper secondary National Olympic Committee schools, the FOC initiated the three-year LSSSP that started in 2017. The FOC accredited 25 public mainstream lower secondary schools (ages 13 to 15 years) from 14 municipalities to participate in the project during three consecutive academic years from 2017 to 2020 (Finnish Olympic Committee, 2020). The project was intended to benefit the governing bodies in the private, school and sport domains by identifying efficient ways to strengthen the co-operation among sport clubs, sport academies, sport federations and lower secondary schools. The schools participating in the LSSSP pledged to teach student athletes academic and life skills and provide them with opportunities to accumulate up to 10 hours a week of physical activity and sports training during school hours, with the ultimate aim to ease the transition into upper secondary education afterwards. The Finnish national core curriculum for basic education grants schools a high degree of autonomy to create their own local curriculum (Finnish National Board of Education, 2016), which allowed the project schools flexibility in creating their own timetables, content and structure for school days. For contextualised understanding of Finnish lower secondary schools as DCDEs, the following key aspects are crucial: (a) tuition is free, (b) student athletes face the same academic demands as regular students, (c) student athletes are admitted based on their athletic competence and (d) student athletes can get time allowances for sport training and competition.

4.2.4 Macrosystem - the sociocultural context of Finland

The macrosystem is the most extensive organised layer of an ecological environment replicating a wider sociocultural context, culture or subculture (Bronfenbrenner 1979). Overarching national policies (i.e. macro-level; Aquilina & Henry, 2010) set the foundation for agreements between educational and sporting bodies (i.e. exo-level), which in turn determine the organisation of DC support systems at the meso-level (i.e. schools and sport clubs; Stambulova and Wylleman, 2019). Previous research has identified three dominant (North American, Australian and European) and two increasing (Asian and South American) cultural discourses (Stambulova & Ryba, 2014), with specific laws, regulations, values, attitudes and ideologies that directly and indirectly affect student athletes' lifeworld and life course options via the underlying micro-, meso- and exosystems (Stambulova et al., 2021). Finnish student athletes are affected by macro-cultural influences stemming from the national and youth cultures in the private domain, whereas the study culture and sports culture are influential in the domains of school and sport, respectively. Regarding the national culture, Nordic countries form a solid sociocultural context, with shared liberal attitudes and ideologies, and societal values of individualism, human

dignity, solidarity, democracy and rule of law, with a few national variations. These overarching values, attitudes and ideologies set the frame for the underlying youth, school and sport cultures.

Forming a concise picture of the Finnish youth culture phenomenon is beyond the scope of this thesis, as the paradigm encompasses a massive amount of established and evolving subcultures centred on various free-time contexts and ideologies that are shared by a group of people (Salasuo & Hoikkala, 2012). Organised sport activities are arguably an essential part of Finnish youth culture, as over 50% of adolescents aged 13–15 years are active members of sport clubs (Kokko & Martin, 2019), making the partition between sport and the private life domain more complicated (Korhonen et al., 2020). Furthermore, the globalisation of youth culture through the presence of and opportunities provided by information technology allows endless opportunities to access global cultural products (Salasuo & Hoikkala, 2012) and provides youth with a range of possibilities for leisure time activities, which might also be one plausible explanation for a steep dropout rate from organised sports witnessed around the age of 15 years (Kokko & Martin, 2019). In general, student athletes perceive that the culture within a specific sport has a stronger influence than the national sporting culture (Henriksen et al., 2010), and consequently, the social atmosphere involved in a distinct sport influences how they perceive the role of sport in their life (Henriksen et al., 2014). This becomes even more pronounced when they attend a school with athletes enrolled in other sports (Henriksen et al., 2010).

In Finland, education is of high national importance, and the core values of the Finnish educational culture are that the interests of the individual outweigh those of the state. The national core curriculum for basic education emphasises learning as a socially situated phenomenon where knowledge is constructed through joint interaction and in collaboration among stakeholders while safeguarding individual needs and abilities (Finnish National Board of Education, 2016). Finnish students generally rank high in international comparisons of academic performance in literacy, reading, mathematics and science (Leino et al., 2019), and Finnish athletes have historically reached success in international sporting arenas. Thus, the educational and athletic heritage is passed down from one generation to the next through academic and athletic institutions in a socialisation process (Bronfenbrenner, 1979).

4.2.5 Chronosystem – student athlete DC adjustment on a timeframe

The outermost layer of Bronfenbrenner's ecological systems theory is known as the chronosystem, which encompasses the concept of time. The chronosystem represents influential events and transitions that affect adolescents'

development over the course of time (Bronfenbrenner, 2005). Student athletes go through normative and non-normative transitions and exhibit individual patterns of athletic, academic, psychological and psychosocial development during distinct stages of their DC (Stambulova et al., 2009; Wylleman & Lavallee, 2004, Wylleman et al., 2013). In terms of athletic development, three major normative transitions involving four distinct phases (e.g. initiation, development, mastery and discontinuation) from the beginning of the athletic career to the post-career stage have been identified (Bloom, 1985). The development stage in sport is characterised by higher intensity and volume in training and competition and increased demands of developing competencies in school and finding time for other roles and activities in life (Wylleman & Rosier, 2016). Academic development encompasses normative transitions from primary school at 6 or 7 years of age to secondary education (lower and upper secondary school) at the age of 12 or 13 years, to higher education at the age of 18 or 19 years (university) and to a professional occupation (Wylleman & Lavallee, 2004). The stage of lower secondary school is a challenging but important phase of academic development due to major academic changes related to growing academic demands and adjustment to new school buildings and unfamiliar peers and teachers (Bronfenbrenner, 1979; Salmela-Aro et al., 2008). Although the ages of the athletic transitions are tentative and vary, for example, in regard to the type of sport and context (Behr & Kuhn, 2019; Kuettel et al., 2017), the transition from the initiation to the development stage aligns with the transition from primary school to lower secondary school at the academic level.

Psychological development encompasses three major developmental stages: childhood, adolescence and adulthood. Psychological development in adolescence is a complex normative process of emotional, cognitive and behavioral growth in parallel with independent biological maturation (Steinberg, 2005). Important developmental tasks for early adolescence, 12–14 years of age, include establishing autonomy from parents and exploration of identity, while adapting to new social roles and planning for the future (Salmela-Aro & Tuominen-Soini, 2013). Thus, a crucial psychosocial development task for this stage is to develop functional relationships with peers, coaches, teachers and parents (Wylleman & Rosier, 2016). In all, the time perspective (i.e. chronosystem) is of crucial importance in terms of the current thesis because it focuses on DC adjustment during the first two years of lower secondary school during which adolescents negotiate major overlapping physical, emotional and social developmental tasks while adjusting to intensifying athletic and academic demands.

4.6 Philosophical positioning of the study – pragmatism

The term paradigm (or paradigmatic position) denotes the philosophical set of beliefs and values that guide the selection of theoretical and practical tools in research, providing a means for the research community to understand the complex nature of the world (Lincoln et al. 2011). Previous DC research has predominantly been rooted within positivist or post-positivist and, to some extent, constructivist paradigms (Stambulova & Ryba, 2014; Stambulova & Wylleman, 2019). However, the current thesis takes a pragmatist paradigmatic position that accentuates a close connection between research problems, methods, context, theory and practice in an attempt to understand the multiplicity of student athletes' DC adjustment in Finnish lower secondary schools (Stambulova, 2016).

Pragmatism focuses on recognising, choosing an appropriate approach, and taking action to solve a problematic situation as a human activity (Kaushnik & Walsh, 2019). To go beyond treating pragmatism merely as a philosophy for problem-solving calls for closer inspection of the philosophical foundations of the paradigm. Pragmatism sidesteps the philosophical starting points of ontology and epistemology in their traditional sense by emphasising human experience as a product of habit or active inquiry (Morgan, 2014). Active inquiry involves a cyclic continuous interpretation process between subjective beliefs and objective assessment of prior actions as a central form of human experience informing decision-making to better manage one's existence within a specific context (Deen, 2011; Morgan, 2014). An individual's experiences of and attempts to understand the world are fundamentally socially and contextually situated (Deen, 2011). A five-step systematic pragmatic approach to inquiry was utilised in the research for this thesis for exploring student athlete adjustment in lower secondary school, which was originally introduced by Dewey (1938) and further developed by Morgan (2014).

In the first step, growing burnout and declining engagement were identified as socially situated problems typical of adolescent student athletes in lower secondary school. In the second step, the initial problem was reanalysed, which led to identifying additional layers of the problem and specifying new research objectives. Consequently, experiences and social interactions were identified as important facilitators of DC adjustment, and these factors, along with engagement and burnout, informed the formulation of the three research objectives relating to the overarching research aim. Following from the philosophical premises relevant for pragmatism, the features chosen to represent adjustment (i.e. burnout, engagement and experiences) can be positioned in psychology and defined as psychological attributes reflecting the

internal processes of the person that give rise to perceptible expressions (Guoyon et al., 2018). As these psychological attributes are linked to action and forged by social interactions, human experience can be both objective and subjective in nature (Maul, 2013). Moreover, psychological attributes reflect an individual's capacity to learn, reason and make choices grounded in their cultural, biological, social, political and historical contexts and environments (Dewey, 1938), and stem from being integrated into a system of symbiotic environments (Guyon et al., 2018). The two major frameworks of this thesis, the socioecological theory and the person–environment framework, align with the main features of pragmatism, suggesting that to truly understand an individual's experience (i.e. adjustment) the various collaborative aspects of the broader context as well as the characteristics of the specific environment need to be considered (Edwards, 2008).

The third step involved selecting an appropriate research design among a wide variety of potential options for addressing the main aim of the research (Morgan, 2014). In this thesis, the selection fell on the exploratory sequential mixed methods design, which is characterised by an initial quantitative phase that is followed by a qualitative phase (Cresswell et al., 2003). The quantitative phase allowed involving many participants to detect both common and individual trends in engagement and burnout within and between student athletes and regular students. The subsequent qualitative phase provided additional clarification of the results derived during the quantitative phase but also provided interpretive and comprehensive evidence regarding the role of experiences and social interactions in the adjustment process. The fourth step involved selecting research methods that complemented the research design and permitted addressing the specific objectives (Goldkuhl, 2012), before conducting the research itself in step five. An intermixing of surveys, interviews and non-participant observations were valuable actual mechanical methods for measuring and observing the different layers of DC adjustment (Feilzer, 2010) and shedding light on the complex relationships among the psychological attributes chosen to represent adjustment (Kaushnik & Walsh, 2019). The choice of research design and methods was also guided by an attempt to produce practical information that can be useful for developing the daily practices of lower secondary schools to support future elite athletes (Hanson et al., 2005). Lastly, as pragmatism underscores that an investigation can never be free of a researcher's prior understanding and experiences (Guba & Lincoln, 2005), it must be highlighted that the psychological attributes considered in this study essentially represent adolescents' experiences that have been constructed on the beliefs and actions of the researcher.

5 Methods

The current thesis is connected to the LSSSP in two important ways. First, an essential part of the LSSSP involved adopting a bottom-up approach for gathering large amounts of information to assess the structure, content, use of resources and operating cultures of the schools involved in the LSSSP during the three project years from 2017 to 2020 (Finnish Olympic Committee, 2020). Second, my research used parts of the gathered information, which together with other related research produced knowledge that helped to develop successful local strategies that can ultimately be used to frame national guidelines for a DC working model to be employed in lower secondary sports schools. Therefore, the first part of this section focuses on describing the LSSSP and the involved schools and providing a general overview of research conducted as part of the LSSSP. This is followed by a more detailed description of participants, measurements and analytical approaches and is rounded out by discussing ethical aspects relevant for the research project and especially for the present thesis.

5.1 Context: description of the schools participating in the LSSSP

The LSSSP took place in the academic years from 2017 to 2020. A total of 19 lower secondary schools were granted an official sport school profile by the FOC for the first academic year of the project which was 2017–2018. Subsequently, six additional schools joined the pilot project; hence, a total of 25 schools were enrolled in the project for the last two academic years from 2018–2020. The participating schools were typical medium- to large-sized urban public lower secondary schools (ages 13 to 15 years) consisting of 400–900 students, with the primary task of providing teaching to regular students in accordance with the national core curriculum for basic education (Finnish National Board of Education, 2016). Although the majority of students studied in general education classrooms, the schools also delivered targeted sports programmes with ancillary curricula approved by the FOC to one classroom of student athletes. The adapted curricula had three main features, including providing student athletes opportunities to accumulate up to 10 hours of physical activity and sports training during school hours (8–16), teaching life skills and knowledge needed to negotiate growing demands in sport and school as a specific school subject, and developing platforms for digital learning to accommodate the absences from teaching due to sports participation (Finnish Olympic Committee, 2017). Furthermore, the schools committed to organising standardised physical

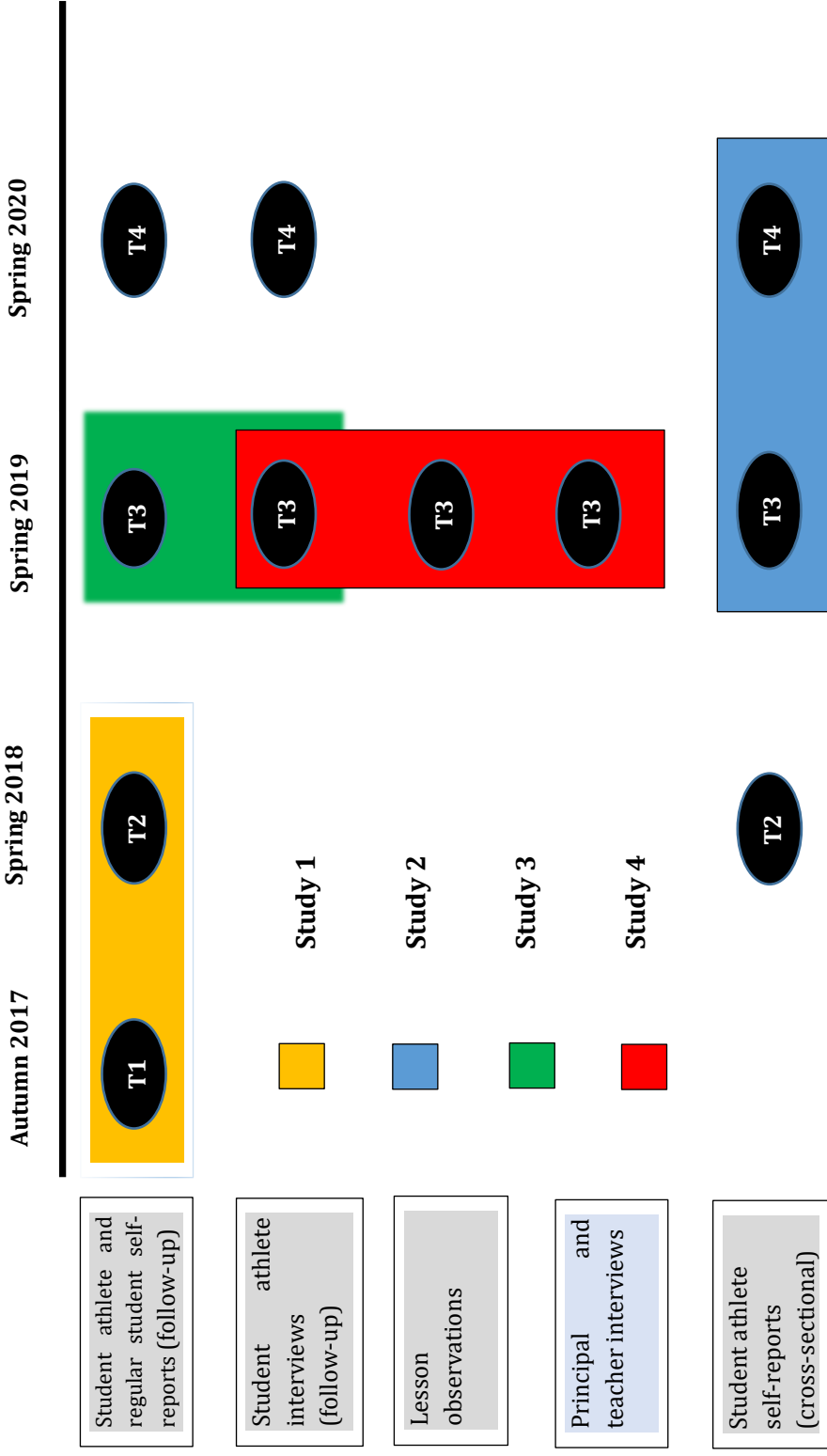
aptitude tests for selecting the most appropriate applicants based on national standards set by the FOC. Consequently, approximately 23–25 students with the best athletic ability and most potential for future development were granted a position in the school's sports programme for the upcoming academic year. All accepted student athletes were nested within the same classrooms for the three years they spent in lower secondary school.

5.2 LSSSP-related research

The LSSSP schools agreed to participate in data collection, with the aim of monitoring and evaluating different phases of the LSSSP (Finnish Olympic Committee, 2017). Students and school personnel in the LSSSP schools were key informants in the data collection procedure. In support of developing a national DC model, the FOC authorised the Research Institute for Olympic Sports (KIHU) to collect different types and levels of data needed to evaluate the project. KIHU published an annual evaluation report during each year of the project (Finnish Olympic Committee, 2020). In parallel with the evaluation, a research collaboration was established among KIHU, Åbo Akademi University and the University of Jyväskylä, with the intent to involve more actors in the process of collecting, analysing and reporting data. The university representatives launched a longitudinal mixed-methods research project labelled “Sport and Education for Life” that was led by associate professor Jan-Erik Romar from the University of Åbo Akademi and funded by Högskolestiftelsen i Österbotten [The University Foundation in Ostrobothnia]. The overall aim of the research project was to examine individual and environmental factors underpinning DC development and the well-being of lower secondary school student athletes in Finland throughout grades 7 to 9. The project started in 2017, and I was involved in planning and executing the collection of data during the three project years. The project data were utilised in all four studies referred to in this thesis as well as in KIHU's annual evaluation reports and a large number of bachelor's and master's theses produced at the two universities. Figure 2 displays the different types of data collected at four time points (T1–T4) as part of the research project. The quantitative and qualitative parts of the data set that were utilised in the four studies referenced in this thesis are illustrated with distinct colours in Figure 2.

FIGURE 2

Timeline of data collection



5.3 Participants and procedure of the research project

To reach a nuanced understanding of the DC adjustment of talented young Finnish athletes at the beginning of their DC path, cross-sectional and longitudinal data from three different cohorts were collected as part of the research project “Sport and Education for Life” during three consecutive years 2017–2020. The first cohort comprised student athletes and regular students born in 2004 who participated in longitudinal data collection from the beginning of the three-year pilot project, namely, from the academic year 2017–2018. All 19 pilot schools that were enrolled during this time point were contacted and given an opportunity to participate in the longitudinal part of the research. Participation was voluntary, and written informed consent was obtained from the parents of 350 student athletes and 267 regular students from 16 of the 19 eligible schools. These students were assigned a personal identification number, which they entered when filling out self-report questionnaires at four time points (T1 – autumn of 2017, T2 – spring of 2018, T3 – spring of 2019 and T4 – spring of 2020) during three consecutive academic years 2017–2020. Furthermore, within the main sample a subsample of 30 and 16 student athletes participated in one-on-one baseline and follow-up interviews at T3 and T4, respectively. The data collection for this cohort also included 15 principal and teacher interviews as well as 12 non-participant lesson observations at five purposively selected schools during T3. The second cohort consisted of student athletes born in 2005 who answered cross-sectional surveys at T3 and T4 during seventh and eighth grade, respectively. The third cohort consisted of student athletes born in 2006 who answered a cross-sectional survey at T4 during grade seven. The second and third cohorts answered the surveys without entering individual identification. Altogether, 625 student athletes from 25 pilot schools were eligible for cohorts two and three, as six new schools joined the pilot project for the last two academic years of 2018–2020. Table 1 presents the participation rates in the quantitative part of the data collection for the three cohorts during four time points (T1–T4) at the individual and school levels.

Table 1*Student and School Participation Rates in the Quantitative Part of Data Collection during Academic Years 2017 to 2020*

| Cohort 1 Student athletes (<i>n</i> = 350), regular students (<i>n</i> = 267), schools (<i>n</i> = 16) | | | | | Cohort 2 Student athletes (<i>n</i> = 625), schools (<i>n</i> = 25) | | | | Cohort 3 Student athletes (<i>n</i> = 625), schools (<i>n</i> = 25) | | | |
|--|----------------|----------------|----------------|----------------|--|----|----------------|--------------|--|----|----|----------------|
| | T1 | T2 | T3 | T4 | T1 | T2 | T3 | T4 | T1 | T2 | T3 | T4 |
| Student athletes (<i>n</i> , %) | 294 (75.4%) | 248 (70.9%) | 217 (62%) | 198 (56.6%) | - | - | 465 (74.4%) | 425 (68%) | - | - | - | 567 (90.7%) |
| Regular students (<i>n</i> , %) | 219 (82%) | 198 (74.2%) | 159 (59.6%) | 157 (58.8%) | - | - | - | - | - | - | - | - |
| Number of schools (<i>n</i> , %) | 16 (100%) | 12 (75%) | 13 (81.2%) | 15 (93.7%) | | | 19 (76%) | 15 (60%) | | | | 22 (88%) |
| Grade level | 7 | 7 | 8 | 9 | - | - | 7 | 8 | - | - | - | 7 |

5.4 Study design

Studies I, III and IV utilised different parts of the data collected from cohort 1, whereas study II used data from cohorts 2 and 3. The characteristics of studies I–IV are presented in Table 2. The aim of study I was to examine the role of social support from significant others and student behavioural engagement in student athletes' and regular students' school burnout using cross-sectional questionnaire data collected during two time points over one academic year at the beginning (T1) and end (T2) of Grade 7. The sample consisted of 209 student athletes (45% girls) and 156 (54.5% girls) regular students drawn from cohort 1. The mean ages of the student athletes and regular students were 13.5 ± 0.3 years and 13.6 ± 0.3 years at baseline (T1), respectively. The two data sets (T1 and T2) were merged using personal identification numbers, and after a listwise deletion procedure, 59.7% of student athletes and 60.7% of regular students who had answered both surveys were included in the final sample. Students completed the first internet-based questionnaire in November and December of 2017 and the second questionnaire in April and May of 2018 during class hours. The school-level participation rate was 84.2%, as students from 16 of the 19 enrolled schools answered the surveys.

Using cross-sectional data collected at two independent measurement points from January to March of 2019 and from January to March of 2020, the aim of study II was to construct and validate the Sport Engagement Instrument (SpEI) in the Finnish DC context. The first data set included 465 student athletes (56.8% boys) from cohort 2 who were in grade seven when answering the survey, with a mean age of 13 ± 0 years. The second data set comprised 992 student athletes (51.2% boys) from cohorts 2 and 3, of whom 57.2% were seventh graders (cohort 3) and 42.8% were eighth graders (cohort 2). The mean age of the student athletes in this data set was 13.5 ± 0 years. The school-level participation rates were 76% and 96% for data sets one and two, respectively.

The aim of study III was to examine student athletes' DC adjustment in Finnish lower secondary sport schools at the end of the second academic year. In this study, survey and interview data collected from student athletes from cohort 1 at the end of grade eight (T3) in March–May 2019 was combined in a mixed-method design. The quantitative sample included 217 (48.9% girls) student athletes, with a mean age of $14.5 \text{ years} \pm 0.4$ from 12 of the same lower secondary sport schools that were involved in study I. The response rates were 62% and 63.1% on the student- and school-level, respectively. The qualitative data included 19 (10 girls) student athlete interviews from five purposively selected pilot schools with close connections to the university that were willing to permit the researchers access to interview their students. These 19 interviews were

derived from a larger interview sample ($N = 30$) by identifying student athletes that were included in the quantitative sample ($N = 217$) using personal identification numbers. The interviewees competed at the regional ($n = 7$) or national ($n = 12$) level and practiced ice hockey/figure skating ($n = 4$), football ($n = 7$), floorball ($n = 1$), basketball ($n = 1$), gymnastics ($n = 2$), swimming ($n = 2$), track and field ($n = 1$) and motocross ($n = 1$).

The aim of study IV was to examine student athletes' commitment to education and sport during lower secondary education using mixed-methods data collected at T3, including interviews with student athletes and school staff, as well as observations with field notes from the same five purposively selected pilot schools as in study III. All data were collected from student athletes in cohort 1 at the end of their second lower secondary school year in May 2019 (T3). Altogether, 15 student athletes (mean age 14.5 years) and six members from the school staff were interviewed, along with three student athletes and at least one staff member from each school. The inclusion of student athletes was based on gender and type of sport (individual vs. team sports) equality, whereas two subject teachers, two physical education teachers and two principals were selected to represent the school staff. The observations consisted of researchers' field notes regarding teacher instructional behaviour, teacher-peer and peer-peer interactions, and student task orientation during mathematics, Finnish language, physical education, motor skill practice and swimming lessons.

Table 2*An Overview of Studies I–IV*

| Study | Aim | Design/method | Included variables | Analysis |
|-------|---|--|---|---|
| I | To examine the role of school-related support from significant others and student behavioural engagement in student athletes and regular students' school burnout | Cross-sectional survey study with two measurement points over one academic year collected at two time points (T1 – autumn and T2 – spring) Sample (cohort 1): 209 (45% girls) student athletes ($M = 13.5$ years; $SD = 0.3$), and 156 (54.5% girls) regular students ($M = 13.6$ years; $SD = 0.3$) in grade 7 | T1: Social support for school (teacher, peer, maternal, and paternal) Behavioural engagement Background characteristics T2: School burnout | Multiple group confirmatory factor analysis Multiple group structural equation modelling t -test Pearson's correlation |
| II | To construct and validate the SpEI in the Finnish DC context | Two-phase cross-sectional survey study with two independent samples of lower secondary student athletes collected at T3 – spring and T4 – spring Sample 1 (cohort 2 and 3): 992 (51.2%) student athletes in grades 7 (57.2%) and 8 (42.8%) Sample 2 (cohort 2): 465 (56.8% boys) student athletes in grade 7 | Cognitive sport engagement Affective sport engagement Behavioural sport engagement Sport burnout Background characteristics | Confirmatory factor analysis Pearson's correlation |
| III | To examine student athletes' DC adjustment in Finnish lower secondary sport schools at the end of the second academic year | Mixed methods study combining surveys and interviews collected at T3 Sample (cohort 1): A total of 217 student athletes (mean age 14 years; $SD = 0.4$) completed surveys (48.9% girls) and participated in interviews 19 (10 girls) in grade 8 | Quantitative measures: School and sport burnout School and sport engagement Background characteristics Interview protocol: Individual factors (academic and athletic well-being) | Latent profile analysis Two-way analysis of covariance Thematic analysis |
| IV | To examine student athletes' commitment to education and sport during lower secondary education | Mixed methods study with interviews and lesson observations collected at T3 Sample: 15 student athletes (cohort 1) and 6 school staff interviews 5 non-participant lesson observations | Interview protocol: Individual factors Institutional factors Field notes: Teachers' instructional behaviour and interactions Peer interactions Student task orientation | Collaborative qualitative data analysis |

5.5 Measurements

5.5.1 Quantitative measurements

5.5.1.1 School and sport burnout

School burnout was measured using the School Burnout Inventory (Salmela-Aro et al., 2009). The inventory consists of 10 items measuring three dimensions of school-related burnout: exhaustion at school (4 items; e.g. 'I feel overwhelmed by my schoolwork'); cynicism towards the meaning of school (3 items; e.g. 'I feel that I am losing interest in my schoolwork'); and feelings of inadequacy as a student (3 items; e.g. 'I often have feelings of inadequacy towards my schoolwork'). All items were rated on a 6-point Likert scale ranging from 1 (*completely disagree*) to 6 (*strongly agree*), with higher scores indicating a higher level of burnout. The three dimensions of school burnout, i.e. exhaustion, cynicism and inadequacy, were modelled as separate latent constructs in study I and defined as a universal construct represented by an overall sum score in study III. In accordance with the study by Salmela-Aro et al. (2009), the item measuring inadequacy (i.e. I feel that I have less and less to give in my schoolwork) was excluded from study I. The internal reliability (Cronbach's alpha) coefficients varied between acceptable and excellent, with 0.92 for the universal school burnout scale and 0.78, 0.80 and 0.62 when measured separately for exhaustion, cynicism and inadequacy, respectively.

Sport burnout was measured using the Sport Burnout Inventory—Dual Career Form (Sorkkila, Ryba, Aunola et al., 2020), which was developed and adapted to the sport context based on the School Burnout Inventory (Salmela-Aro et al., 2009). The inventory consists of 10 items focusing on three dimensions of sport burnout: exhaustion (four items; e.g. 'I feel overwhelmed by my sport'); cynicism (three items; e.g. 'I feel that I am losing interest in my sport'); and inadequacy (three items; e.g. 'I often have feelings that I am not doing well in sport'). All items were rated on a 5-point Likert scale (1 = *completely disagree*; 5 = *completely agree*) in study II, whereas a 6-point Likert scale (1 = *completely disagree*; 6 = *completely agree*) was used in study III. A sum score was calculated for all 10 items to assess the level of student athletes' overall sport burnout in studies II and III, with higher scores indicating a higher level of burnout. The Cronbach's α for the universal scale was 0.89 and 0.95 for studies II and III, respectively.

5.5.1.2 School engagement

School engagement was measured as a three-dimensional construct comprising affective, behavioural and cognitive subcomponents. Study I utilised measures of

behavioural and affective engagement, and study III used the cognitive dimension of school engagement. The middle school student version of the Research Assessment Package for Schools (RAPS; Wellborn & Connell, 1987) was used to measure behavioural school engagement. The scale consists of five items that assess the extent to which a student exerts effort on schoolwork, pays attention in class, prepares for classes and believes that doing well in school is personally important (e.g. 'I work very hard on my schoolwork'). The items were modelled as indicators of an underlying latent construct; thus, one item ('I often come to class unprepared') was removed due to low factor loading and large cross-loadings on other items. The remaining four items rated on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*) showed adequate internal consistency (Cronbach's $\alpha = 0.76$).

Affective engagement was assessed through students' positive interactions with teachers, peers, parents and coaches in school. The subscales that measured teacher (e.g. 'Overall, my teachers are open and honest with me') and peer support (e.g. 'Students at my school are there for me when I need them') were derived from the brief version of the Student Engagement Instrument (Appleton et al., 2006; Virtanen, Moreira et al., 2018) and subscales measuring parental support (e.g. 'When I have problems at school, my mum/dad is willing to help me') from the Finnish 2010 Health Behavior in School-Aged Children Questionnaire (Kämppi et al., 2012). The original scale measured parental support as a composite construct, but was split into two parallel-worded scales to measure paternal and maternal support separately for this thesis. Each scale consisted of three items and was rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The items were used as indicators of maternal, paternal, teacher and peer support and showed good internal consistency with Cronbach's α values ranging from 0.71 to 0.87, with higher values indicating a higher level of affective engagement.

Cognitive school engagement was measured using the cognitive dimension of the Student Engagement Instrument Brief Version (Virtanen, Moreira et al., 2018) that included two subscales with three items each related to future aspirations and goals in school (e.g. 'I am hopeful about my future) and control and relevance of school (e.g. 'Learning is fun because I get better at something'). All items were rated on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). The items were used to generate standardised factor scores for the analysis in study III, and the internal reliabilities for the future goals and aspirations and the control and relevance of schoolwork subscales were 0.81 and 0.76, respectively.

5.5.1.3 Sport engagement

Similar to school engagement, sport engagement was measured as a three-dimensional construct including cognitive, affective and behavioural subcomponents. All three dimensions of sport engagement were used in study II, and study III used measures relating to the cognitive dimension of sport engagement. Based on the Finnish version of the Student Engagement Instrument (Virtanen et al., 2016), a new instrument for measuring cognitive and affective sport engagement, the SpEI, was constructed and validated in the sport context in study II. The cognitive dimension of engagement in the final SpEI included two subscales with three items each that measured future aspirations and goals in sport/school (e.g. I am hopeful about my future) and control and relevance of sport/school (e.g. 'Learning/sport is fun because I get better at something'). The items were treated as indicators of latent constructs, and the McDonald's omega (ω) values of internal consistency varied from 0.73 to 0.90 for the two subscales in study II. These items were used to generate standardised factor scores for the analysis in study III, and the Cronbach alpha reliabilities for the future goals and aspirations and the control and relevance of sports subscales were 0.90 and 0.72, respectively. All items were rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).

The affective dimension of the SpEI included four subfactors with three items each that measured coach-athlete relationships (e.g. 'Overall, adults in my sport club treat athletes fairly'), peer support for sport (e.g. 'My teammates are there for me when I need them'), paternal support and maternal support for sport ('My mother/father attends my practice, games or competitions'). The six items measuring paternal and maternal support were derived from the Exercise Behavior of Children and Adolescents in Finland Study Protocol (Kokko et al., 2019), whereas the items measuring coach and peer support were taken and modified into the sport context from the Student Engagement instrument (Virtanen et al., 2016). The items that were used as indicators of latent constructs showed sufficient internal consistency values (i.e. McDonald's ω) in the range of 0.60–0.93 for all subfactors in study II. All items were rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*) and reverse-coded so that higher scores represented a higher level of engagement.

The middle school student version of the RAPS (Wellborn & Connell, 1987) was modified to the sport context to evaluate the level of behavioural sport engagement (5 items; three positively worded (e.g. 'I work very hard in sport') and two negatively worded (e.g. 'I don't try very hard in sport')). The items were rated on a 4-point Likert scale (1 = *strongly disagree*; 4 = *strongly agree*), and the two negatively worded items were reverse-coded so that higher scores indicated

a higher level of behavioural engagement in study II. A sum score of all five items was used in the analyses. The Cronbach's α for the scale was .74.

5.5.1.4 Background characteristics

The effect of gender was included in the qualitative and quantitative analyses in studies I–IV. Type of sport and level of competition were inserted as ordinal variables in study II and as covariates in study III, while time spent on sport was included in study II. Type of sport was split into ice hockey, football, other team sport and individual sports (e.g. swimming, track and field, etc.), and level of competition was differentiated between student athletes competing at regional or national levels. Time spent on sport were differentiated between student athletes enrolled in all types of physical activity less than 10 hours per week, from 10–20 hours per week, and more than 20 hours per week. Adolescents' self-reported grades in Finnish language and literature, mathematics, and English were averaged to create a measure of GPA that was included as a covariate in studies I and III. Based on participants' descriptions of their mothers and fathers' professions and current occupation and using the *classification of socioeconomic groups* issued by Statistics Finland (n.d.), maternal and paternal socioeconomic status were broken into four levels: 1 (*unsalaried position*), 2 (*blue-collar*), 3 (*lower white-collar*) and 4 (*upper white-collar*) in study I. Both mother's and father's SES were considered with the highest of the two used to indicate parental SES in study I.

5.5.2 Qualitative measurements

Qualitative data used in studies III and IV consisted of interviews and observations with field notes. Altogether, three researchers from the research team conducted 30 interviews with student athletes and 12 school staff interviews in a quiet room in five of the pilot schools at the end of academic year 2018–2019 at T3, when student athletes were in grade eight. Of the 30 student athlete interviews, 19 were utilised in study III and 15 in study IV together with six school staff interviews. The questions and themes of the semi-structured interview guide were generated based on previous DC literature (e.g. Guidotti et al., 2015; Li & Sum, 2017; Stambulova & Wylleman, 2019) to provide an in-depth description of the participants' DC experiences. Although the interview guide was similar for student athletes and school staff, school staff members were included to provide a more holistic understanding of DCs from different perspectives. The interview guide consisted of three broad dimensions of questions related to personal (e.g. 'How important is education?'), interpersonal (e.g. 'How does your mother/father support you in matters related to school?')

and institutional (e.g. ‘How do schools support students in combining education and sports?’) factors.

Two researchers from the research team participated as non-participant observers in 12 lessons altogether at the end of 2018–2019 academic year in parallel with the interviews. Seven of the 12 lesson observations were included in study IV. The observed lessons included traditional classroom subjects such as mathematics and Finnish, but also teaching in the sport setting (i.e. physical education, motor skill practice and swimming). The observations provided the researchers with a chance to get a glimpse of an ordinary school day in LSSSP schools. The observation categories involving teachers’ instructional behaviour and interactions, peer interactions and student task orientation were partly derived from the classroom assessment scoring system (Virtanen et al., 2019).

5.6 Analytical approaches

The four studies forming the core of this thesis utilised both quantitative and qualitative methods to address the three specific research objectives. Studies I and II drew on a quantitative approach, whereas studies III and IV combined different analytical strategies in a mixed methods approach. The first of the following two subsections describe the quantitative analytical strategies that were applied in studies I, II and III, whereas the second subsection provides general information regarding the qualitative methods used in studies III and IV. More detailed information can be found in the methods section of the original studies.

5.6.1 Quantitative analysis

The majority of the quantitative analyses were performed using the statistical software package MPlus (8th edition; Muthén & Muthén, 2017), whereas IBM SPSS Statistics (Version 26.0; IBM, Armonk, NY, USA) was primarily used for preliminary and descriptive analysis. Mplus was chosen for its ability to implement a wide array of statistical models and latent variable modelling capabilities.

After collecting the data, each data set was assessed individually in Excel. This step involved cleaning up the data set by removing unengaged participants showing missing values greater than 20% or answering similarly across the Likert scale items, and participants whose answers failed to register properly. The data were then transferred to SPSS, where extraneous data were excluded from the data set, and the remaining data were screened for missing data, normality and multicollinearity. The pattern of missing values was analysed using Little’s (1988) test, and missing values imputed using the expectation maximisation algorithm (Dempster et al., 1977) in studies I and III. In study II, a

full information maximum likelihood estimation utilising all available data without imputation was used. To test whether the data were normally distributed, the skewness and kurtosis values of each individual item included in the studies were compared against general guidelines. One or multiple items used in studies I, II and III showed non-normal distribution by assuming kurtosis or skewness values outside the range of -2.2 to 2.2 (Sposito et al., 1983). Thus, the maximum likelihood estimation with non-normality robust standard errors (Muthén & Muthén, 2017) was chosen as an estimator in the main analysis to account for slight non-normality in the measures. Multicollinearity was assessed by calculating variable inflation factor (VIF) values for the observed variables in each study. Cronbach's alpha was used to examine the internal consistency for the latent study variables in studies I and III, and McDonald's ω in study II due to items with correlated residuals (Dunn et al., 2014). Means and standard deviations were calculated for the latent variables and factor scores in study I and study III, respectively. Pearson's correlation coefficients were assessed for the latent and observed study variables in study II, and for the latent variables in study I.

Missing values were replaced by the value of -9 before importing the data to Mplus. In study 1, structural equation modelling was applied to examine the dynamics between social support and behavioural engagement and school burnout among student athletes and regular students. A prerequisite for conducting path analysis is that the groups under study interpret the constructs in a conceptually similar way (Vandenberg & Lance, 2000). Therefore, the analysis was initiated by evaluating the measures' equivalence (i.e. measurement invariance) across the two groups in a three-step process using multiple-group CFA (Rudnev et al., 2018). A *t*-test was used to investigate the differences in latent variable means between student athletes and regular students. The path analysis involved testing a set of hypotheses in a stepwise procedure. The first three hypotheses concerned investigating direct paths between the constructs, and the fourth evaluated the role of behavioural engagement as a mediator between school-related support and burnout using the CINTERVAL (bcbootstrap) function with 1,000 iterations to produce bias-corrected bootstrap 95% confidence intervals (Lau & Cheung, 2012). In the first four steps, analyses were conducted using the whole sample, including student athletes and regular students. Finally, the model test command was used to discern whether the latent factor means and direct and indirect relationships among the latent factors differed between the two groups. The effect of gender, prior GPA, and parental socioeconomic status on the latent constructs were accounted for in all path models.

Study II investigated the reliability and validity of a novel instrument labelled SpEI in two independent samples of Finnish lower secondary school student athletes. Confirmatory factor analysis was used to determine the best fitting version for the SpEI by comparing fit indices for six competing non-nested theory-based models in sample 1 and sample 2. Chi-square (χ^2), root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis Index (TLI), Akaike information criteria (AIC) and the Bayesian information criteria (BIC) values were reported. Reliability and validity of the items in the final SpEI were examined through squared correlations between the item and the factor and by estimating standardised factor loadings in two independent samples (i.e. samples 1 and 2). Convergent and discriminant validity was assessed by estimating paths from behavioural engagement and sport burnout to the latent factors of the SpEI while accounting for gender, type of sport, level of competition and time spent on sport. The intra-class correlation coefficients (ICCs) were calculated for the study variables in sample 1 and sample 2 to evaluate the need for multilevel modelling (Muthén & Satorra, 1995) by assessing the proportion of the total variance explained by the classroom level.

In study III, latent profile analysis (LPA) was used to identify distinct profiles among student athletes based on standardised factor scores on two subscales (i.e. future aspirations and goals, and perceived control and relevance) measuring cognitive engagement and burnout in sport and school. The LPA analyses were conducted using a stepwise process in which one profile was added in each step until the number of profiles with the best fit to the data was detected. BIC, Vuong-Lo-Mendell-Rubin likelihood ratio, entropy values, theoretical meaningfulness and class sizes were considered when choosing the final class solution among models including one to five profiles. Two-way analysis of covariance (ANCOVA) was applied to further compare the mean-level differences in the latent study variables between the distinct profiles extracted through LPA. Partial eta-squared (η^2_p) and Cohen's *d* effect sizes were calculated to assess the magnitude of each factor and compare latent factor mean differences between the profiles, respectively. GPA, gender, type of sport and level of competition were inserted as covariates in the analysis.

5.6.2 Qualitative analysis

In study III, the purpose of the qualitative analysis was to describe similarities and differences in everyday DC experiences of student athletes representing three distinct profiles extracted during the quantitative phase of the study. Interview data concerning individual academic and athletic well-being were analysed using thematic analysis (Braun & Clarke, 2006). The interviews were

first transcribed, and then the interview transcripts were actively and repeatedly read to form initial ideas for coding. The initial codes were arranged into themes and subthemes, and all relevant coded data extracts were collated within the identified themes using an inductive (i.e. data-driven) latent approach. The collated extracts for each theme were read and adjusted to capture the coherent patterns of the coded data by assessing the validity of the themes in relation to the whole data set. Finally, the results were written up by selecting convincing extracts to provide evidence of the themes' prevalence within and across the data.

In study IV, a collaborative qualitative data analysis (Richards & Hemphill, 2018) approach was adapted to analyse interview and observation data regarding student athletes' commitment to school and sport during lower secondary education. Coding categories were developed, and codes with reference to notions in the DC framework were defined. The final codes and a coding frame, including key concepts, their definitions and criteria for recognition in the coding, were created after reaching consensus upon discussion of differences in coding and categorising of the themes for each data source.

Trustworthiness was strengthened in studies III and IV by adhering to the four stringent criteria of credibility, dependability, confirmability and transferability (Guba & Lincoln, 1982). Establishing credibility involved making the study process transparent to participating student athletes and school staff at the beginning of the study and pilot testing the interview and observation protocols at one school prior to the main data collection. But one of the researchers was also used as an outside peer debriefer who contributed valuable comments when deciding upon the final themes. Dependability was enhanced through a comprehensive description of the study methods, and measurement of the accuracy and intercoder reliability of field notes was conducted by two different researchers during pilot testing.

Confirmability of the qualitative findings (i.e. audit trail) was established by carefully comparing and contrasting original data with extracted themes and choosing extracts that elucidated the lived experiences of the participants and by applying several types of data triangulation (i.e. methods, researcher triangulation and sources). Combining verbatim quotes from student athletes with a detailed account of the study context as perceived by the researchers (i.e. field notes) and school staff (i.e. interviews) augmented the transferability of the qualitative data (Shenton, 2004).

5.7 Ethical considerations

In research concerning individual experiences of well-being collected from human subjects, it is important to reflect on ethical aspects. Thus, the collection, analysis, presentation and evaluation of data were conducted in agreement with the Declaration of Helsinki (World Medical Association, 2013) and Finnish legislation. The Ethics Committee of Åbo Akademi University approved the design for the research project 'Sport and education for life' prior to the first data collection in 2017. The research complied with the ethical principles of research in the humanities and social and behavioural sciences in Finland by respecting autonomy, material and immaterial cultural heritage, and avoiding harm to human research participants (Finnish National Board on Research Integrity, 2019). Participation in all parts of the research was voluntary, and participants could withdraw from the study at any point without suffering any negative consequences. Data management (handling, storage and protection) followed the general guidelines of Åbo Akademi University. Different data sets that were collected throughout the research project were completely confidential and used solely for research purposes.

Studies I, III and IV drew on data collected from cohort 1 that participated in the longitudinal part of the research project. Regarding cohort 1, 16 of the 19 pilot schools distributed a letter to the parents of the students, in which the content and purpose of the longitudinal research, processing of personal data and how the research was to be conducted in practice to potential participants were described in detail. The letter also included a consent form with the options to participate voluntarily or to refuse to participate. Participants returned the consent form to schools, and schools mailed an envelope containing all the consent forms to the research team. The longitudinal study targeted participants aged 13–15 years. Although the participation of minors under the age of 15 was principally decided by the parent, the students' own consent was also requested. Thus, only participants providing informed consent signed by both the participant and one parent were included in the study and assigned a personal identity number. Participants answered surveys using their personal identity number, and in the transcription phase of the interviews, the name of the interviewees was replaced by a corresponding personal identity number. These procedures ensured that none of the participants were identifiable in the analysis, presentation and evaluation phases of the research. The identifiers and the information needed to link the longitudinal data were stored safely and kept separate from the data to be analysed. A specifically assigned data controller for the research data was the only person with access to the encryption key.

Concerning study II, after being accepted and prior to being granted a position in the schools' sport programmes, student athletes and their parents from cohorts 2 and 3 from 25 schools signed a written agreement with the sport schools in which the mutual responsibilities were listed. As part of the agreement, student athletes had the opportunity to either accept or decline to participate in research conducted as part of the LSSSP. In respect to the ethical principles of research with human participants in Finland, parental consent is not compulsory when collecting data affiliated with the daily activities of school (Finnish National Board on Research Integrity, 2019). From these two perspectives, and given that the cross-sectional questionnaire data used for study II included no personal information, the written agreement was considered sufficient for collecting and using data from cohorts 2 and 3.

6 The main findings of the studies

The aim of the research for the present thesis was to examine the interplay between school- and sport-related engagement and burnout in shaping adolescent student athletes' DC adjustment during the first two years of lower secondary school, and the role of social influences and experiences in the adjustment process. The main aim was pursued from different perspectives in the four studies, with the first study focusing on the school context, the second on the sport context, and the last two on the school and sport contexts simultaneously.

6.1 Study I: An examination of the relationships among social support, behavioural engagement and school burnout among adolescent student athletes and regular students

The aim of the first study was to examine the role of social support from significant others and student behavioural engagement in student athletes and regular students' school burnout in Grade 7. Using multigroup structural equation modelling and two separate sets of cross-sectional data collected at the beginning and end of grade 7 (T1 and T2), the study addressed five research questions with related hypotheses. Confirming hypotheses I-III, the results relating to the first three research questions revealed anticipated direct positive relationships from social support to behavioural engagement and negative longitudinal associations from social support and behavioural engagement to school burnout for the whole sample (i.e., student athletes and regular students). However, the paths from different sources of social support to behavioural engagement and burnout varied in strength. Teacher support was the strongest direct predictor of all three dimensions of burnout (i.e., inadequacy, exhaustion, and cynicism), whereas maternal, teacher and peer support were equally strong positive predictors of behavioural engagement. In addition, the results suggested that behavioral engagement had a strong effect on cynicism, a moderate effect on inadequacy, and a weak effect on exhaustion.

Relating to research question four and the related hypothesis, the results indicated that maternal and peer support were influential in shielding against cynicism indirectly through strengthening behavioural engagement. However, the relationship between teacher support and school burnout was not mediated by behavioral engagement, as teacher direct support to cynicism, exhaustion, and inadequacy remained significant and negative after the indirect paths were included. Moreover, the total effect of teacher direct support on all three

dimensions of school burnout was significant, as well as the indirect effect of maternal support on cynicism via behavioral engagement. The results of the fifth and last research question indicated that student athletes reported a higher mean level of peer support in comparison to regular students. Furthermore, the results revealed that the direct path from behavioral engagement to inadequacy was significantly stronger for student athletes than for regular students. This pattern suggests that behavioral engagement is key in reducing student athletes' sense of inadequacy regarding school.

6.2 Study II: The reliability and validity of the Sport Engagement Instrument in the Finnish DC context

The second study consisted of two related studies with the major aims of (a) constructing the SpEI and (b) validating the new instrument in the Finnish DC context. The preparatory study focused on describing the work of an expert panel consisting of six researchers and practitioners in constructing and refining the factors and items of the SpEI. After a review of existing scales, the Finnish version of the 33-item SpEI was selected as a starting point for the construction phase. Completion of this phase resulted in a preliminary scale consisting of 33 items that captured the cognitive and affective dimensions of sport engagement. In the following factor and item refinement phase, the preliminary scale was administered to a group of 25 seventh grade student athletes who functioned as external reviewers that provided written and oral feedback on the clarity, relevance and comprehensibility of the items. Based on the summarised participant feedback, the panel made semantic changes and replaced four items that were intended to measure family support for sport with eight items that measured paternal and maternal support for sport separately. As a result of the preparatory study, the panel produced 37 items.

In the main study, these 37 items were used to validate the SpEI, with two independent samples of Finnish adolescent student athletes. The validation process consisted of three objectives and related hypotheses. The first objective involved contrasting the factor structure of six competing models using confirmatory factor analysis, and the results revealed that two models with 18 items displayed the best psychometric properties in both samples. The 18 items were divided between two factors that measured the cognitive and four factors assessing the affective dimension of engagement, with three items in each of the six factors. In regard to the second objective, the six items that were intended to measure the cognitive dimension of engagement displayed excellent item reliability and validity properties, whereas the 12 items pertaining to affective engagement showed lower but adequate psychometric properties. Relating to

the third objective and aligning with the hypothesis, behavioural engagement showed medium to large positive correlations with all six affective and cognitive engagement scales. Sport burnout displayed medium-sized negative associations with all affective engagement and cognitive engagement subscales, except for paternal and maternal support for sport. Small correlations could also be established between personal characteristics (i.e. gender, type of sport and time spent on sport) and some of the affective and cognitive engagement factors.

6.3 Study III: Toward adjustment profiles for lower secondary student-athletes in the Finnish dual career context: A mixed-methods approach

The aim of the third study was to examine student athletes' DC adjustment in Finnish lower secondary school at the end of the second academic year by assessing the interplay among engagement, burnout and experiences through an explanatory sequential mixed methods approach (Tashakkori & Teddlie, 2003). The results of the quantitative phase suggested grouping student athletes into three adjustment profiles based on the standardised mean factor scores of six latent factors measuring burnout and engagement in school and sport. These profiles were labelled: (a) *well-adjusted*, (b) *reasonably functioning* and (c) *struggling*. Student athletes in the *well-adjusted* profile (56.2%) showed a high level of DC adjustment, as witnessed by low sport and school burnout together with a high level of control and relevance and ambitious aspirations and goals towards sport. Adolescents belonging to the *reasonably functioning* profile (33.6%) displayed average DC adjustment. They reported slightly higher levels of sport-related burnout and lower control and relevance, and aspirations and goals in sport compared with adolescents belonging to the *well-adjusted* profile. Student athletes representing the smallest profile (10.2%), *struggling*, showed the least DC adjustment. Characteristics of this profile were elevated levels of sport burnout and low aspirations and goals, control and relevance in comparison with student athletes in the *well-adjusted* and *reasonably functioning* profiles. Adolescents in the three profiles varied only marginally in terms of school-related engagement and burnout and background characteristics, while showing different patterns of engagement and burnout in sport.

The thematic analysis of interviews in the following qualitative phase resulted in three main themes: school-related experiences, (b) sport-related experiences and (c) DC experiences in relation to burnout and engagement. Student athletes within the three profiles reported similar school-related and varying sport-related and DC experiences. More precisely, managing school successfully and earning high grades was a high priority in their lives. They also perceived that

the daily requirements of school were moderate in general; however, an uneven distribution of school work throughout the school year with exams and assignments accumulating towards the end of the semester gave rise to temporary school-related stress. However, the student athletes were generally satisfied with the structural support their schools and teachers provided for combining school and sport.

For student athletes belonging to the *well-adjusted* profile, sport was an essential part of life, and they had ambitious plans for a future sports career. Student athletes in the *reasonably functioning* profile experienced sports mainly as a source of fun, and they were willing to invest in sports as long as it provided them enjoyment. Adolescents in the *struggling* profile participated in sports for social reasons and to create daily routines, making life more organised, while simultaneously expressing problems in finding motivation and dealing with high uncertainty regarding the future role of sport in their life. DC management strategies were the most crucial DC experiences in relation to burnout and engagement. Adolescents within the *well-adjusted* profile had developed time management and prioritisation skills that enabled them to maintain high DC engagement and low burnout. A lack of these skills made it difficult to integrate sports and school meaningfully for student athletes representing the *reasonably functioning* and *struggling* profiles.

6.4 Study IV: The dual commitment of student athletes in lower secondary schools in Finland

Also in the fourth study, the aim was to examine student athletes' commitment (i.e., engagement) to school and sport, but this time by combining the individual, school staff and researcher perspectives on the phenomenon. Analysing the interviews through means of collaborative qualitative data analysis resulted in three main themes relating to school commitment, sport commitment and the DC. The student athlete and staff interviews together with researcher field notes indicated that student athletes were interested and goal-oriented in their studies and had ambitious plans for their future educational path. The majority of student athletes had a high GPA in academic subjects, and the low performers were missing from the sports classes in comparison with regular classes. Interviews with school staff along with lesson observations suggested that girls were more inclined towards school, whereas boys focused more on sports in general.

Moreover, student athletes showed greater variation in their sport commitment than their commitment towards school. The interviews suggested the existence of a group that was characterised by great determination and

interest towards sport and was highly ambitious and dreamed of a professional sporting career and competing in international arenas. The interviews also suggested that there were student athletes with less ambitious future plans who participated in sport because they thought it was fun and believed that sport provided an opportunity to be active and meet friends and allowed them to maintain a certain fitness level. In general, the interviewees agreed that sports taught them valuable competences for everyday life, including persistence, ability to plan life and social skills. Regarding the last theme, labelled a DC, the interviewees recognised the importance of school as a backup plan if the dream of a professional sporting career should become inaccessible. The opportunities for extended sports training and the adjustments that sport schools made to their study programmes and requirements were appreciated by student athletes. School staff recognised that the biggest threat for student athletes' well-being and DC was simultaneous success expectations and cross-pressure coming from family members, coaches and teachers.

7 Discussion and conclusions

The aim of the research for the present thesis to examine the interplay between school- and sport-related engagement and burnout in shaping adolescent student athletes' DC adjustment during the first two years of lower secondary school, and the role of experiences and social influences in the adjustment process. Overall, the results pointed to similar positive cross-sectional associations between social support and student behavioural engagement, and negative longitudinal connections from social support and behavioural engagement to school burnout for student athletes and regular students. Furthermore, the results indicated that the SpEI presents a plausible option for measuring sport engagement along affective and cognitive dimensions in a similar manner than in the school context. Lastly, the results indicated the importance of accounting for experiences and broader social interactions to comprehend student athletes' school- and sport-related engagement and burnout in lower secondary school. Therefore, the central findings are discussed in regard to the three objectives and previous research in this section. After that, I critically assess the theoretical and methodical foundation of this thesis, and offer directions and suggestions for future research. I conclude by presenting practical implications and conclusions that can be drawn from the results of this thesis and used to further develop Finnish school-based lower secondary DC development environments.

7.1 The interrelationships between engagement and burnout in school and sport

The first objective of the present thesis was to examine the interplay between school- and sport-related engagement and burnout in shaping student athletes' DC adjustment. In studies I–IV, this objective was pursued from different perspectives. Studies I and II examined the relationships between engagement and burnout at the group level. Study I focused on assessing the longitudinal relationship between behavioural engagement and burnout in the school context, and study II concentrated on examining the direct associations among cognitive engagement, behavioural engagement and burnout in the sport context. In study III, a person-oriented approach was utilised to identify different adjustment profiles among student athletes based on measures of sport- and school-related engagement and burnout. Study IV provided a perception of school and sport engagement on the group level from the perspective of student athletes, school personnel and the researcher. In line with previous findings (Parker & Salmela-Aro, 2011; Salmela-Aro et al., 2009), the results generally

indicated that burnout and engagement are two interrelated processes that are strongly and negatively correlated at the group level. Mirroring more complex patterns between the individual and the environment (van Vianen, 2018) and previous research (Gustafsson et al., 2017; Skrubbeltrang et al., 2016; Tuominen-Soini & Salmela-Aro, 2014), the results also suggested that individual patterns of engagement and burnout can be identified among student athletes. Consequently, sport- and school-related burnout and engagement will be described and related to previous findings, both on a group level and from an individual perspective.

An interesting finding of study I was the non-existent group-level differences in school burnout and behavioural engagement between student athletes and regular students. Similarly, study III indicated that student athletes within the three adjustment profiles reported corresponding values of control and relevance and future aspirations and goals in school (i.e. cognitive engagement). These findings portray the larger Finnish cultural milieu and underscore the significance of education in DC contexts (Moazami-Goodarzi et al., 2020). Corresponding seamlessly with previous findings among older Finnish upper secondary student athletes (Sorkkila et al., 2017), study III indicated that roughly 10% of lower secondary student athletes suffered from slightly heightened school burnout. However, the results of study I imply that despite participating eagerly and devoting extensive time to sport, student athletes report no higher incidence of school burnout compared with regular students in lower secondary school (Institute for Health and Welfare, 2020a).

Previous research (Fredricks & Eccles, 2006, 2010) has suggested that the values and skills learned through sports training can be consistent with educational values and may facilitate student school adjustment. Indeed, studies I and IV jointly indicated that student athletes generally showed a high level of academic achievement with less variation in GPA than regular students, and study III showed that the majority of student athletes had conventional routines in working with school tasks in class and at home as well as clear and ambitious future academic plans. Moreover, study I suggested that a higher level of behavioral engagement predicted lower school-related cynicism and inadequacy. Based on these findings and drawing on previous research (Salmela-Aro & Read, 2017; Virtanen, Lerkkanen et al., 2018), it seems that academic success and behavioural and cognitive school engagement might be factors that protect adolescents, particularly against feelings of cynicism and inadequacy.

However, school engagement appeared to be a double-edged sword, as the results also suggested that engaging extensively in school in parallel with sport might also provoke unfavourable consequences (Ryba et al., 2017). The direct path from behavioural engagement to school-related exhaustion ceased to exist

when accounting for the effect of social support and background characteristics in study I. The interviews in study III provided additional support for this view, as student athletes representing all three profiles expressed that studying for exams and excessive amount of homework (i.e. behavioural engagement) can be exhaustive. Importantly, student athletes do not seem to differ from regular students in this sense as feelings of exhaustion are common, especially among adolescent girls in the eighth and ninth grades (Institute for Health and Welfare, 2020a). Given that adolescent boys reported lower levels of school exhaustion and behavioural engagement than girls in study I, it seems that regulating the level of effort towards school is decisive in the development of exhaustion. Too much effort towards school can result in exhaustion that can subsequently spill over to school-related inadequacy and cynicism (Kim et al., 2015; Parker & Salmela-Aro, 2011).

The overall results of study II align with previous findings regarding the interrelationships between engagement and burnout in the sport context (Guillén & Martínez-Alvarado, 2014; Hastie et al., 2020; Lonsdale, Hodge, & Jackson, 2007). More precisely, the cognitive dimension of engagement was found to be distinct but highly interrelated with behavioural engagement and negatively correlated with sport burnout on the group level. However, studies III and IV determined that student athletes showed much greater individual variation in their sport burnout and engagement than in the corresponding constructs in the school context. Concurring with previous findings (Sorkkila et al., 2017), student athletes within all three profiles displayed higher levels of sport burnout than school burnout in study III. In particular, adolescents representing *the well-adjusted profile* had significantly lower sport-related burnout than adolescents in the two other profiles, whereas the student athletes in *the reasonably functioning profile* had lower sport-related burnout than adolescents in *the struggling profile*. The majority of adolescents seemed to manage their DC without developing symptoms of burnout (Sorkkila et al., 2020), but engaging fully in two time-consuming and taxing contexts might come at the price of heightened sport burnout for some student athletes (Gustafsson et al., 2011; Sorkkila et al., 2017).

The results of study III revealed three differing combinations of engagement towards sport and school. Student athletes belonging to the *well-adjusted* profile showing a convergent DC path (Torregrosa et al., 2015) dreamt of success in international competition and a professional sporting career, but considered schools an important backup plan. For them, the combination of low burnout together with high perceived control and relevance in school and sport enabled a balanced DC and setting ambitious future plans for school and sport (Ryba et al., 2017). Roughly one-third of adolescents were categorised as *reasonably*

functioning, with their current level of engagement resembling a parallel DC path involving an almost equal investment in school and sport (Torregrosa et al., 2015). Although sport played a major role in their lives, the future role of sports was more uncertain (Ryba et al., 2017), as their major foci and dreams were directed towards pursuing a university education and an academic career. Lessening engagement in sport presents a possible mechanism to regulate heightened burnout for maintaining the DC (Stambulova et al., 2015). Approximately 10% of student athletes belonged to the *struggling* profile, who considered sport merely as a hobby while school was a high priority, thus resembling a linear DC path (Torregrosa et al., 2015). However, the combination of high sport burnout and low control and relevance in sport signifies serious DC adjustment issues, which eventually increases the risk for abrupt sport dropout (Moazami- Goodarzi et al., 2020; Sorkkila et al., 2019).

To summarise, consistent with the person–environment fit theory (Eccles et al., 1993), the congruence between sport and school predominantly affects student athletes' DC adjustment (Edwards, 2008). The results of the four studies jointly indicate that student athletes at an early stage of their DC showed good functioning in the school context, while they had to make necessary concessions in sport to preserve their DC. For the majority of student athletes, school and sport seemed to complement each other, as witnessed by low burnout and high parallel engagement in school and sport. However, some adolescents had problems reconciling high ambitions in school with intensifying demands in sport, which led them to develop sport burnout of varying severity and feelings of not being in control of their sporting career and to question the future role of sport in their life.

7.2 The role of social interactions in student athlete DC adjustment

The second objective of the present thesis was to examine the role of social influences in student athletes' engagement and burnout in school and sport. In study I, multigroup structural equation modelling was applied to examine differences in the relationships between student athletes and regular students' social support and behavioural engagement and school burnout in Grade 7. One of the objectives of study II was to assess the validity properties of the SpEI by estimating paths from sport burnout and behavioural engagement to affective and cognitive engagement. Studies III and IV utilised thematic and collaborative qualitative analysis of interviews to assess how student athletes' experiences relating to social interactions affected their engagement and burnout in school and sport. In support of the socioecological theory (Bronfenbrenner, 1979), the

results echoed the multifaceted bidirectional interplay between the individual and direct interactions within the micro- and mesosystems (i.e. teachers, mothers, peers and coaches), and indirect social influences stemming from exo- and macrosystems in the adjustment process.

Regarding micro-level interactions, student athletes perceived that teachers in multiple ways reinforced engagement and prevented burnout by providing support for their studies and sport (Kim et al., 2018; Li et al., 2010; Virtanen, Lerkkanen et al., 2018). Teachers offered student athletes direct instrumental and specific support by allowing flexibility in assignment and exam schedules and freedom in classwork to accommodate individual needs (Gledhill & Harwood, 2015; Henriksen et al., 2020), but were also willing to discuss sport-related issues and express empathy when the demands of school and sport were intense (Knight et al., 2018). Indeed, study I indicated that teacher support was especially efficient in reducing school-related exhaustion and cushioned against feelings of cynicism and inadequacy. Study III provided additional evidence for this result by suggesting that student athletes representing the three adjustment profiles experienced that teacher support was key in balancing a combination of multiple daily training sessions, intense games and competitions with the heavy loads of school work. By adapting students' workload in school (Kristiansen, 2017; Salmela-Aro, 2017), teachers can facilitate engagement and prevent school-related exhaustion (Virtanen, Lerkkanen et al., 2018), which in turn positively affects student athletes' well-being and functioning in the sport context (Eccles et al., 1993). Working against exhaustion is especially important, as exhaustion can subsequently provoke feelings of cynicism and inadequacy (Parker & Salmela-Aro, 2011).

In addition, results of study I also suggested that teacher support had the second-largest direct positive effect on adolescent behavioural engagement and the strongest causal relationship to all three dimensions of burnout. However, the results also supported the notion that the effect of teacher support on students' school adjustment seems to vary from teacher to teacher, as not all teachers are able to provide extensive support for all students (Quin, 2017; Roorda et al., 2019). According to study III, *struggling* student athletes usually turned to teachers at the last minute asking for extended time for handing in assignments, whereas *well-adjusted* adolescents maintained a social relationship with teachers that was based on discussions other than school-related matters. It seems that although the behaviour of both groups relates to social intelligence and adaptability (De Brandt et al., 2017), *well-adjusted* student athletes are more efficient and facilitative in adapting to a new school environment.

Furthermore, study I indicated that maternal support was the third largest positive contributor to behavioural engagement and displayed a negative and

indirect longitudinal association with cynicism through behavioural engagement. It may well be that the attention and practical guidance from mothers expose adolescents to norms and values that encourage engagement in daily school work, which in turn functions as a protective factor against students' feelings of cynicism towards school (Li et al., 2010; Virtanen et al., 2019). These results concur with previous findings among regular students, suggesting that maternal support is crucial for student adjustment in the school context (Estell & Perdue, 2013; Wang & Eccles, 2012). Similar patterns were identified in study II, with positive and medium effect size correlations established between maternal support and student athlete behavioural engagement, and a small negative correlation with burnout in the sport context. Studies I and II indicated that paternal support was neither associated with school-related burnout nor behavioural engagement, whereas a weak positive correlation was established between paternal support and behavioural sport engagement. It should be acknowledged that these two studies primarily assessed context-specific emotional forms of support, and the soft and subtle emotional support provided by mothers might be more suited to recognise athletes' needs, anticipating problems and removing barriers (Knight et al., 2018). Fathers, in turn, tend to direct their efforts towards maximising opportunities for success and supporting future aspirations specifically through direct instrumental and specific support behaviours (Gledhill & Harwood, 2015; Henriksen et al., 2020), which might explain their limited role in the adjustment process.

The results of studies I and II indicated that support derived from peers was influential for adolescents' adjustment in the sport and school context. More precisely, peer support had a medium-sized correlation with sport-related burnout and behavioural engagement, whereas peer support was found to be the largest direct contributor to adolescent behavioural engagement and it protected indirectly against inadequacy through its effect on behavioural engagement in the school context. Importantly, sport peers were an influential source of support for student athletes' school adjustment in study I, which aligns well with previous findings among regular students (Kim et al., 2018; Pietarinen et al., 2014; Virtanen et al., 2014). Moreover, sport peers seem to play a similar imperative role in the promotion of sport-related behavioural engagement and shielding against burnout, as in the school context. A central aspect of the LSSPP was that student athletes shared the same classroom with DC-engaged peers from other sports; thus, grouping them together appears to benefit their holistic DC adjustment (Henriksen et al., 2020). The results of studies III and IV indicated that most student athletes managed their schooling without problems and had a high GPA; therefore, they did not need to turn to their school peers for school-

related support. Consequently, their total influence in supporting academic success might be marginal (Virtanen et al., 2014).

Lastly, coach support showed medium-sized direct associations with sport burnout and behavioural engagement in study II. These findings imply that coaches had succeeded in creating and building an emotionally satisfying and safe relationship facilitating the quality of the athlete's sport-related engagement and well-being (Henriksen et al., 2020; Taylor & Bruner, 2012). Actively maintaining a positive coaching climate is crucial for future development (Storm et al., 2021), as student athletes often view coaches as their mentors and seek advice from them (Sheridan et al., 2014). An apparent shortcoming of the current thesis is that it fails to account for the influence of coach support on student athlete adjustment in the school context. In particular, it has been suggested that although coaches underline the importance of providing flexibility in sports training to further current educational demands (Henriksen et al., 2020; Korhonen et al., 2020), they also tend to stress the importance of sport as the first priority.

In addition to direct interactions between student athletes and significant others within the microsystem, student athletes' experiences of efforts within the mesosystems and social influences stemming from exo- and macrosystems affected the adjustment process both directly and indirectly. At the overarching macro level, the national norm is that adolescents are expected to perform well in school, which student athletes constituting the sample for this thesis as well as older Finnish DC athletes seem to comply with (Moazami-Goodarzi et al., 2020; Sorkkila et al., 2020). Adolescents in lower secondary school are at the beginning of their sport career, and thus, the societal expectations towards sport are not as established as those towards school (Wylleman et al., 2013). Assessing the specific influences of the overarching macro level on student athlete adjustment is difficult; however, the high uniform importance that student athletes attribute to school indicates that there is an indirect effect in place. Given that local sport academies, sport clubs and especially sport federations' financial support depend to some extent on the number of athletes' enrolled in these contexts and their success in competition, the actors on the underlying exo-level might place more pronounced expectations on individual athletes (Nikander et al., 2021).

Despite occasional stress and physical exhaustion, student athletes had a more positive view of how well agents from the school and sport contexts had succeeded in coordinating efforts to balance the DC load in comparison to the views of the school personnel. More precisely, the interviews with school staff suggested a partial divergence and cross-pressure in the wills of school staff and coaches subjecting student athletes to negative DC experiences on the meso-level

(Storm et al., 2021). Furthermore, the results indicated that student athletes considered the adapted curricula and joint flexibility of school personnel as key in adapting their workload (Kristiansen, 2017; Salmela-Aro, 2017). They also experienced that schools compensated to a certain degree for a lack of integration and coordination of efforts between sport clubs and schools (Henriksen et al., 2010).

7.3 Student athlete experiences underpinning DC adjustment

The third objective of the present thesis was to examine the role of experiences in student athlete DC adjustment. This aim was addressed from the perspective of an individual in study III and more generally on the group level in study IV. In study III, three main themes, including sport-related, school-related and DC-related experiences, were identified in relation to burnout and engagement, whereas corresponding themes revolving around engagement were identified in study IV. Overall, the extracted experiences reflected an individual's perceived benefits, opportunities, challenges and demands imperative at the beginning of their DCs. In general, the results support previous research (Cartigny et al., 2021; Sorkkila et al., 2020; Sum & Li, 2017), suggesting that personal and environmental experiences jointly affect the development of DC engagement and burnout, but also extend our knowledge with an understanding of how these experiences interact during the early years of the development stage.

Regarding personal experiences, student athletes had varying experiences of how well they had managed to combine sport and studies during the first two years of lower secondary school. In support of the quantitative findings, the results of studies III and IV implied that student athletes considered school to be a highly important part of their lives and they had high academic ambitions. Contradicting previous findings (Stambulova et al., 2015), student athletes employed more coping efforts and felt more adjusted in school than in sport. Reaching school success was considered essential for sustaining broad opportunities for future schooling endeavours. Most student athletes had set their sight on a specific upper secondary school, and some had already made plans for a certain university education they were aiming to apply for after upper secondary school. Among student athletes, there were individuals who approached their studies more casually and others who focused more on sport than school during periods of preparation for important upcoming competitions. However, contrary to previous findings, they were not willing to let sport participation compromise their school success (Ryba et al., 2016, 2017). This fits

well with the fact that high academic achievement has been established as a typical feature of dual engaged athletes (Moazami-Goodarzi et al., 2020).

Early adolescence (ages 11 to 14 years) is generally characterised by moderate demands in sport, school and private life (Li & Sum, 2017), which the interviewees in studies III and IV confirmed. However, progressively increasing school and sport requirements complicate combining sport and studies in middle and late adolescence (Stambulova et al., 2015). The interviews confirmed three specific DC scenarios relating to perceived barriers and demands that complicated their DC adaptation (Linnér et al., 2019). The first scenario involved catching up with school assignments due to overlapping training and competition schedules. Aligning with previous research (Brown et al., 2015; De Subijana et al., 2015), ambitious success expectations, especially in school, and a lack of time to successfully manage both school and sport were causes of stress for all student athletes. However, student athletes who possessed internal coping strategies (i.e. DC competencies) were better prepared to overcome this type of barrier than adolescents lacking these competencies (De Brandt et al., 2017). In particular, strong self-discipline, dedication to succeed in sport and school and an ability to plan and prioritise figured as essential DC management skills facilitating higher autonomy and better flexibility to cope with unexpected deviations. Although *reasonably functioning* adolescents also possessed some of these DC management skills, it appeared that *well-adjusted* student athletes' more developed self-discipline and proactive ability to schedule life helped to regulate stress and prepare in advance for school absences due to sports participation throughout the school year.

The second DC scenario includes navigating exams that conflict with a crucial competitive phase in sport (Linnér et al., 2019). The results of study III indicated that numerous exams during the last weeks of the school were stressful for all student athletes. In line with previous findings (De Brandt et al., 2017; Sorkkila et al., 2019), *well-adjusted* adolescents showed higher mental toughness in the form of resilience that allowed them to maintain normal functioning despite hardship. The pressure from exams seemed to produce temporary stress hampering *reasonably functioning* adolescents from functioning well in the sport context and provoked a more comprehensive negative carryover effect complicating *struggling* student athletes' daily lives and well-being. In particular, struggling student athletes' retroactive way of managing their DC, meaning they made their decisions ad hoc after events had happened (Torregrosa et al., 2015), resulted in them skipping practice to study for exams and developing symptoms of burnout due to inadequate personal resources.

The third DC scenario involves selecting the best study plan and making the best study choices, allowing for a smooth integration of both sport and studies

currently and in the future (Linnér et al., 2019). Studies III and IV indicated that student athletes attributed differing present and future meanings to sport. Adolescents who dreamed of a professional sporting career participated eagerly in sport training to improve their sport skills and had plans to apply to a sport-oriented upper secondary school. Among student athletes were also those who considered sport as a source of fun and enjoyment, whereas the opportunity to meet friends was an important reason to participate in sport for a minority of student athletes. As the latter two groups had not made any future plans for their athletic career, they missed the benefits of career planning (De Brandt et al., 2017) and the possible benefits of having success expectations in shielding against stress and burnout (Sorkkila et al., 2017). In all, the differing reasons for sport participation and future aspirations towards sport also seemed to affect the adjustment process, as a strong dedication in sport carried over to a will to succeed in the school context.

Student athletes' environmental experiences aligned with the overarching aims of the LSSSP (Finnish Olympic Committee, 2020), as studies III and IV showed that they had learned life and coping skills partly through participating in sport but also as a result of teaching units devoted particularly to teaching these skills. Furthermore, adolescents were generally satisfied with and appreciated the hours allowed for sports training during school time. These results imply that the sport-oriented lower secondary schools had succeed in delivering a holistic support package to the individual undertaking the DC in general (Morris et al., 2020). Consequently, the majority of student athletes described a positive supplementary person–environment fit characterised by individual experiences that match those of the environment (Kristof-Brown et al., 2005). However, a lack of congruence between school-level support functions and the needs, abilities and values of the person (Van Vianen, 2018) hindered the functioning of some student athletes (Edwards, 2008). Although insufficient individual attributes were to some extent complemented by the environment (i.e. complementary fit), these student athletes had to adapt their behaviour in different ways to better match the demands of the DC environment (Eccles & Roeser, 2011).

7.4 Methodological and theoretical reflections

The methodological coherence of a study can be determined by assessing the congruence between the research design and the theoretical and philosophical positions informing the research (Lincoln et al., 2011; Tashakkori & Teddlie, 2003). The research included in this thesis relies on a data-driven exploratory mixed methods design, in which quantitative and qualitative data encompassing questionnaires, interviews, and real-time observations were combined to reflect

the realities underpinning student athlete DC adjustment. Methodologically, pragmatism provides researchers with the freedom to choose their research method(s) but is often criticised for using the research aim itself as an argument for justifying the selected methodological approach (Tashakkori & Teddlie, 2003). A definite strength of the research used in the current thesis is that multiple methods, measures and researcher perspectives were combined in the four original studies to add rigor, complexity, richness and depth to the understanding of the studied phenomenon. The variable-oriented (e.g. confirmatory factor analysis, structural equation modelling, correlational analyses and measurement invariance testing) and person-oriented (e.g. latent profile analysis) quantitative approaches were characterised by good validity and reliability properties. In particular, the consistent associations among school-related social interactions, burnout and engagement found within the general population as well as the subgroups of student athletes provided support for generalising the results. Supporting the exploratory mixed methods research design, the qualitative approaches (i.e. collaborative qualitative analysis and thematic analysis) backed up the quantitative findings in study III, pointing to differing student athlete sport-related experiences. In general, the qualitative results of studies III and IV supported each other and thus contributed to the overall trustworthiness of the findings. However, it is essential to note that the results relating to the experiences of student athletes belonging to the struggling profile in study III need further confirmation. Importantly, the present thesis was part of a larger research collaboration that was established to collect data in conjunction with the LSSSP. As such, the schools forming the context and related research were the two central elements of the LSSSP. The joint aim of these two parts was to contribute to the development of a national DC model aimed at supporting adolescents' well-being and providing opportunities for combining school and sport in lower secondary school. Consequently, it is essential to note that the pilot schools participating in the LSSSP provided practical and structural DC support services that affected the results of the research.

Despite these strengths, there are also some limitations in the way this approach was applied in the present work. To begin with, the key concept (i.e. adjustment) of the study is generally conceptualised quite differently across research (Carey, 2009; Lazarus, 1976). Adjustment is commonly considered to be a multi-layered construct including themes of coping, emotion, subjective meaning, adaptation, support and orientation (American Psychological Association, 2015). Drawing on recent DC literature (Guidotti et al., 2015; Stambulova & Wylleman, 2019) and research on adolescents (Institute for Health and Welfare, 2020a; Salmela-Aro et al., 2017), engagement, burnout,

experiences and social influences were acknowledged as central elements of adjustment. Consequently, the way in which adjustment has been conceptualised in the present thesis seems to omit some of the relevant concepts around adjustment. For example, the concept of engagement is arguably closely related to motivation (Alrashidi, 2016). However, engagement is essentially a personal resource of the individual, as basic psychological needs (autonomy, competence, relatedness) have been shown to represent motivational precursors for engagement (Hodge et al., 2009), and motivation has been shown to mediate the association between psychological needs and engagement (Podlog et al., 2015). Therefore, the concept of engagement is positively correlated with motivation in the school and sport contexts but is however considered a distinct construct (Fredricks et al., 2004; Hastie et al., 2020).

In line with previous work (Aunola et al., 2018; Fredricks et al., 2004; Salmela-Aro et al., 2009; Sorkkila et al., 2017), engagement was conceptualised as a positive indicator of adjustment, while burnout, instead of disengagement, was defined as a negative indicator of adjustment. Engagement can in fact be conceptually and methodologically separated from disengagement rather than assessed on the same continuum (Wang et al., 2015). Although disengagement is theorised along the same dimensions as engagement (i.e. behavioural, affective and cognitive), school disengagement essentially models the occurrence of maladaptive development and behaviour (Skinner et al., 2008). Therefore, identifying the specific critical inter-relationships of burnout and engagement can be difficult. Similarly to previous findings (Parker & Salmela-Aro, 2011; Salmela-Aro et al., 2009; Salmela-Aro & Read, 2017; Salmela-Aro & Upadaya, 2020; Sorkkila et al., 2020; Tuominen-Soini & Salmela-Aro, 2014; Virtanen, Lerkkanen et al., 2018), the results of studies I and II utilising quantitative methods revealed negative cross-sectional and longitudinal associations between engagement and burnout in school and sport. Studies III and IV, in turn, suggested that burnout and engagement can also evolve as parallel or positive processes, especially in the sport context. A steep drop in engagement and heightened burnout, particularly towards the end of lower secondary school (Institute for Health and Welfare, 2020a; Salmela-Aro et al., 2017), suggests that in future studies, engagement and burnout should be studied in parallel, using a longitudinal research design to establish causal inferences between school- and sport-related engagement and burnout during grades 7 to 9.

The questionnaires contained items that would have allowed for assessing the three subdimensions of engagement and burnout separately. Due to convergence issues caused by limited sample sizes, the cognitive dimension of engagement was omitted in study I, and studies II and III combined exhaustion, cynicism and inadequacy into a composite measure of burnout. In particular,

exhaustion seems to be a symptom of burnout that is prevalent among adolescent student athletes (Sorkkila et al., 2020), and thus, future studies should preferably separate the multidimensional symptoms of burnout. In addition, the quantitative measures of affective engagement assessed the quality of positive social interactions on the classroom or sport team level. Consequently, adding negative and positive indicators and social interactions in the broader school or sport contexts as part of the engagement construct might have further elucidated the adjustment process. For example, incorporating negative social indicators, such as parental psychological control or success expectations, could have yielded different results. This work utilised quantitative data collected as part of a larger research project, and thus, including additional items to assess negative social interactions would have resulted in the questionnaires reaching a critical length and being too exhaustive for students to answer. A viable option could have been to include questions relating to negative dimensions of social interactions in the interview guide; however, I decided to focus on the positive pole of social interactions to reduce the complexity of the multi-layered interactions within the socioecological framework. The interview guide encompassed questions relating to negative experiences undermining the adjustment process. As with previous research (Li & Sum, 2017), the interviewees attributed primarily positive experiences rather than maladjustment issues to the first stage of the DC. Considering that similar compromises have been made in previous studies and the fact that sport-related engagement has been studied sparsely, the four sub-studies used for this thesis together covered the different dimensions of school- and sport-related engagement and burnout, and thereby provided an important contribution to the research field.

The socioecological framework and person–environment fit theory provided solid theoretical foundations for linking the results of the four original studies together and advanced previous research in important ways. This thesis primarily examined personal adjustment factors within the microsystem but also touched to some extent upon the effect of interrelated systems of microenvironments in the adjustment process (studies III and IV). This approach is consistent with the two guiding theoretical frameworks and philosophical premises of pragmatism, denoting that knowledge is fallible and individuals create knowledge based on their experiences to better manage their existence in an environment (Goldkuhl, 2012). However, it should be noted that narrowing down the research focus comes with some theoretical and methodological limitations. Theoretically, more recent case studies have shown that the features of nested environmental layers influence the individual in unique but utterly complex patterns (Henriksen et al., 2020; Kiens & Larsen, 2020; Linnér et al.,

2020; Morris et al., 2021; Storm et al., 2021). Only correlational measures were used to account for the efforts of important members of an athlete's DCE (i.e., coaches and parents) in the microsystem, and the larger sociocultural interactions were examined only indirectly. In future research, assessing the dedication of individual stakeholders and the integration of efforts among DCE representing school, sport and family could produce a more holistic description of the organisational culture of DCDEs.

7.5 Practical implications

According to the pragmatic research paradigm, research findings can be evaluated in relation to their practical, social and moral implications (Giacobbi et al., 2005). As mentioned earlier, the practical efforts in schools and research were closely interlinked in the LSSSP. For an educational intervention to be effective, it is essential to identify social issues of relevance so that they can lead to the potential for action (Thompson, 1997). Therefore, to determine the practical value of the LSSSP for evidence-based practice in support for adolescents DC, it is crucial to consider the functionality of the building blocks from different perspectives by asking questions, such as what parts worked well or did not work well, and for whom (Plath 2006). As student athlete DC adjustment was at the core of my research, the effectiveness of the LSSSP can be assessed at the school and national level. Academic performance is often used as a measure of an environment's efficiency and ability to support student adjustment in Finland. Considering the central findings presented in this thesis, such an assessment presents a partly misleading and unidimensional view of adjustment, as student athletes' showed a high GPA and engagement towards school in general. Finnish schools are generally well equipped to identify students' learning difficulties through systematic screening and to provide them adequate support for learning and school attendance, whereas students showing heightened levels of burnout and lowered engagement in sport may be more difficult to identify and address properly. Given that low perceived control and value of sports hinders athletic development and might subsequently lead to dropout or provoke negative DC functioning, DC-oriented schools should develop innovative and efficient ways to detect early signs of maladjustment and develop subsequent interventions accordingly.

Systematically screening students for their engagement and burnout, especially in sport but also in school, could be one useful method to detect negative changes at an early stage. The SpEI introduced as part of sub-study II together with the parallel worded Student Engagement Instrument (Appleton et al., 2006; Virtanen et al., 2016) and sport (Sorkkila et al., 2017) and school (Salmela-Aro et al., 2009) burnout inventories are useful tools for this. Ideally,

these measures could be used on an annual basis by school counsellors or educational psychologists and discussed in multidisciplinary student care teams to target support functions at both the group and individual levels. Furthermore, although student athletes displayed high school engagement that is generally considered desirable, their differing ability to preserve their well-being and functioning in sport advocate the need for additional actions. Efforts directed towards strengthening personal resources and interpersonal and support-seeking abilities have proven fruitful approaches in supporting adolescent DCs (De Brandt et al., 2017; De Brandt et al., 2018; Korhonen et al., 2020; Storm et al., 2021). As part of the practical efforts included in the LSSPP, the schools taught adolescents adaptability skills aimed at promoting the understanding of sleep, physical activity and nutrition and skills facilitating mental toughness, including self-regulation. The results of study III suggested that despite these skills not being specifically taught, well-adjusted student athletes possessed the ability to use their time efficiently, high self-discipline, dedication to succeed and refined planning skills and flexibility. These are essential DC management and career planning competencies that help students to organise and balance deviations on the DC path (De Brandt et al., 2017), and thus, they should be taught to all student athletes consistently throughout grades 7 to 9.

In addition, the results of studies III and IV revealed intra-individual differences in student athlete experiences, suggesting the need for an individualised approach to assist adolescents in developing their DC competencies. It is particularly important for support providers to identify the situational and contextual challenging DC scenarios and help student athletes develop the required competencies accordingly. Adolescents need different competences depending on the specific challenges they need to cope with (Perez-Rivases et al., 2020). The results showed a group of academically ambitious adolescents with tenacious success expectations and future aspirations in school, who planned to back out of sport as soon as the DC demands would compromise their academic endeavours. For them, environmental support of sporting goals (Henriksen, 2010) and teaching of mental toughness would seem potential ways to prolong their athletic career (De Brandt et al., 2018). In addition, reoccurring discussions with teachers and school counsellors and psychologists aiming at assisting these athletes in developing self-compassion and overcoming inner criticism could alleviate this negative behaviour and support mental well-being as a whole. As their problems appear to be mainly related to stress management and focusing on one context at a time, they would also greatly benefit from mental health promotion programmes aimed at developing resilience and coping effectively with adversity and developmental pressures.

Furthermore, the results revealed a group of adolescents using avoidance and approach coping strategies as a result of not having sufficient DC time management and planning skills. An effective temporary fix to such a serious DC imbalance might be the promotion of social intelligence competencies, including teaching them to ask for advice, maintain interpersonal relationships and make new social contacts, which are crucial for adapting to a new social environment and maintaining an athlete's lifestyle (De Brandt et al., 2017). The DC imbalance also stemmed from a mismatch between high academic expectations and insufficient study skills. More precisely, some adolescents were able to maintain a high level of academic success by lowering their future ambitions in sport and skipping team practice or going easy in school-based training to find time for school work and exams. Therefore, parents, teachers and coaches with opportunities for daily discussions and who observe changes in sport behaviour are perhaps in the best position to chart these deficiencies. Actors within the DCE should be encouraged to integrate efforts in monitoring fatigue and stress and help adolescents to schedule their daily activities (O'Neill et al., 2017) and provide feedback on their actions on a regular basis (Liu et al., 2016). In sum, the results demonstrated the importance of developing a strong and coherent organisational culture that can account for adolescents' differing individual athletic, psychosocial and academic developmental needs (Debois et al., 2015; Defruyt et al., 2019; Wylleman et al., 2013). The newly established DCDEs could function as platforms where support providers representing the sport and school contexts could gather to discuss and share ideas (Harwood et al., 2010; Knight et al., 2018).

Assessing the effectiveness at the macro level is more demanding since each of the LSSSP schools differed in terms of philosophy and the roles and functions of the different components and relations of the DC support programme. Although several implications could be highlighted, I focused on discussing two central aspects that have been prominent in societal debate. The first relates to DCDEs' proficiency in supporting student athletes' academic and athletic development. The present work addresses student athletes who have just entered the first phase of the developmental stage, which represents a crucial step before progressing to the latter part of the development stage, namely, upper secondary school (Wylleman et al., 2013). As noted in the Finnish DC philosophy (Finnish Olympic Committee, 2020), a high level of engagement and a high GPA along with ambitious future aspirations in school suggests that adolescents have a solid foundation to apply and eventually attain an upper secondary education degree. Although producing elite-level athletes is in the interest of every nation, the Finnish DC philosophy is more subtle in placing athletic success expectations on young aspiring athletes. The DCDEs are to

provide a safe and functional environment that supports a balanced growth towards being an elite athlete. However, the results speak in support of a justified concern as to whether roughly half of the adolescents showing impaired ability to manage their current sport career and doubts concerning the future role of sport can or will sustain their participation in sport until they reach the mastery stage.

These results give voice to the second aspect that might be of national interest, namely, whether the grounds for choosing student athletes for and composition of sport classes is optimal? Currently, student athletes are admitted to sport classes exclusively based on the results of national physical aptitude tests, with the most physically competent being selected. High athletic competence by itself may not be sufficient to maintain a DC; thus, conducting interviews along with physical aptitude tests might help distinguish applicants who possess the most potential to maintain a DC in the long run. The results indicated that adolescents had varying motives and approached the extended opportunities for sport training provided by LSSSPP schools differently. Some saw them as important opportunities to spend time with friends and have fun, while others considered them to be crucial for developing the athletic skills needed to become a professional athlete. Satisfaction in terms of enjoyment and fun can function as a glue that holds adolescents in sport (Brown et al., 2015; Graczyk et al., 2015), but may also lead them to drop out when these sensations are no longer derived from sport. This suggests that the problem of choosing the most appropriate applicants has a moral side to it. In particular, should adolescents with strivings directed towards athletic and personal improvement be selected rather than those who participate in sport for social reasons or satisfaction? Providing a specific answer is difficult because adolescents are in the phase of learning how to integrate sport and school into their lives (Li & Sum, 2017).

However, perhaps directing efforts towards adjusting the composition of the sports classes might provide a more fruitful avenue for supporting adolescents' athletic pursuits and well-being. In the LSSSPP schools, student athletes share the same classroom with their sports peers. A heterogeneous grouping of students with different ambitions towards sport complicates ambitious athletes' ability to uphold their elitist mindset (Henriksen et al., 2014). Schools could perhaps provide personalised opportunities for sports training during school time, with less ambitious students getting less time and more ambitious additional opportunities to hone their athletic talent. Individualising students' DC paths comes with practical difficulties however, as the LSSSPP schools have rather inflexible structures when it comes to moving students from one classroom to another. Although adolescents' interest in sport changes rapidly

during lower secondary school (Stambulova et al., 2015), those who have been admitted to sports classes are expected to go on to lower secondary school with their sport peers. Schools should have more flexibility in transferring students between classrooms. Conducting annual interviews would present a plausible option for redirecting disengaged athletes who would benefit from being moved to a regular classroom for the next academic year and identifying adolescents studying in regular classrooms that show an increasing interest in sport. The latter group could be given an opportunity to partake in physical aptitude tests, and through showing sufficient athletic ability, attain a spot in the sport class for the upcoming academic year.

7.6 Conclusion

On the basis of the findings, it can be concluded that despite fluctuations in burnout and engagement in school and sport, the majority of Finnish adolescent student athletes show a high level of DC adjustment and well-being during the first two years of lower secondary school. Concurrently, other adolescents are exposed to waning engagement and symptoms of burnout while trying to adapt to growing demands in sport and school (Wylleman et al., 2013) and an unfamiliar school building, new school peers and a system with subject teachers rather than a single class teacher (Salmela-Aro et al., 2008), which is characteristic of the developmental stage of DC. The results implied that student athletes' adjustment issues arose primarily in the sport context while they displayed good functioning in the school environment. However, the effects of being a misfit in the sport domain can easily transfer to the school or private domain (Edwards, 2008). Although adolescents can momentarily maintain their DC despite showing symptoms of physical and mental exhaustion and patterns of disengagement, these are essentially warning signals of maladjustment, and neglecting them can lead to dropping out of sport (Sorkkila et al., 2019) but also affect adolescents' willingness to study further after lower secondary school (Bask & Salmela-Aro, 2013) and, in extreme cases, to being marginalised in society (Salmela-Aro & Tuominen-Soini, 2013).

As suggested by the person–environment fit theory (Eccles et al., 1993) and socioecological framework (Bronfenbrenner, 1986), adolescents' DC adjustment is forged in the interplay between the person and environment through varying mechanisms. The results indicated that student athletes differed in their individual ability to incorporate school and sport into their daily lives. For most adolescents, sport seemed to spur academic performance (Storm & Enke, 2021) by facilitating values, competencies and skills that are crucial for successful management of daily school activities (Wang & Holcombe, 2010). These adolescents possessed personal DC competencies that outweighed DC demands

and barriers, which allowed them to maintain a high level of well-being and engagement in sport and formulate ambitious academic and sport plans for the future. In particular, high autonomy and responsibility usually spark congruence between school and sport and thus provide opportunities for satisfying socio-cognitive and emotional experiences that protect against ill-being and burnout (Sorkkila et al., 2020). However, an insufficiency of personal resources in relation to DC demands (Eccles & Roeser, 2011; Larsen et al., 2013) resulted in a disharmony between sport and school, and as a response, the adolescents showed different psychological, cognitive and behavioral responses to balance their DC. For example, a pedantic view and high standards in school and sport exposed adolescents to feelings of exhaustion and inadequacy towards school and sport, while others compensated for a lack of DC control through displaying deleterious cognitive and behavioural responses in the sport context.

Although meeting the individual developmental needs of each individual student athlete is demanding, the mix of structural and support functions provided by the LSSSP schools seemed to help adolescents optimise their DC (Henriksen et al., 2020; Linnér et al., 2020). In particular, different forms of support derived from support providers were indirectly and directly linked to engagement and burnout in school and sport. Maternal and teacher emotional support was pivotal for adolescents' holistic DC adjustment, whereas peer and paternal support contributed to adjustment in the sport context. Student athletes were generally satisfied with and recognised that school-level actions and support functions smoothed their DC path; however, the findings indicated that personal resources were most influential in counterbalancing demands and barriers and contributory to a positive DC experience. Although the environment cannot account for all DC demands and barriers (De Subijana et al., 2015), the results showed that identifying new efficient ways to support student athletes at the school level and helping them to develop close relationships with DCE has the potential to expedite meeting the adolescents' needs in the school, sport and private domains and to support them on the DC path, but so far this has largely been unexploited (Brown et al., 2015; Debois et al., 2015; Linnér et al., 2019; Van Vianen, 2018).

To summarise, the thesis provides a crucial insight into general and unique patterns of student athletes' DC adjustment during the first two years in lower secondary school. Because experiences and social influences affect how student athletes perceive the current and future role of school and sport in their lives and because burnout and especially feelings of exhaustion are common among student athletes with high ambitions in school and sport, it would be important to develop more efficient ways to support them. Based on earlier findings pointing to a high dropout rate from sport during lower secondary school and a

high incidence of burnout among student athletes during the first year of upper secondary school (Kokko & Martin, 2019; Sorkkila et al., 2018), it is apparent that these support structures should be individualised and ideally be put in place as soon as adolescents begin their lower secondary school path. The society and schools would benefit from directing more resources to identifying and rectifying adolescents' adjustment issues to support student athletes' well-being as a whole.

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Joni Kuokkanen

Combining School and Sport in Finnish Lower Secondary School:

The Interplay Among Engagement, Burnout and Experiences in Student Athletes' Dual Career Adjustment

Many potential future elite athletes opt to dropout of sports before the age of 15 due to problems in adjusting to intensifying athletic and academic demands, while they need to negotiate major overlapping physical, emotional and social developmental tasks during early adolescence. In response to this, the Finnish Olympic Committee launched a 3-year lower secondary sports schools pilot project from the academic years 2017 to 2020, with the aim of providing a context for talented student athletes to integrate full-time studies with competitive sport in a dual career (DC). As part of a larger longitudinal mixed-methods research project conducted in conjunction with the pilot project, this doctoral thesis investigates student athletes' (ages 13–15 years) DC adjustment in lower secondary school.

Adjustment is studied from the outcome and process perspectives by assessing the interplay between sport- and school-related engagement, burnout, social influences, and experiences in the four studies that are the foundation of the present thesis. To this end, an exploratory sequential mixed-methods design combining survey data with interviews and non-participant observations documented in field notes, and the way in which these factors are used, provide an innovative way of assessing how a mix of personal and environmental factors interact in shaping student athlete adjustment. The results of the present thesis facilitate exchange and promotion of culturally informed practices that can contribute to developing DC support programmes in lower secondary schools and support student athletes' well-being as a whole.

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