JYVÄSKYLÄ STUDIES IN EDUCATION, PSYCHOLOGY AND SOCIAL RESEARCH
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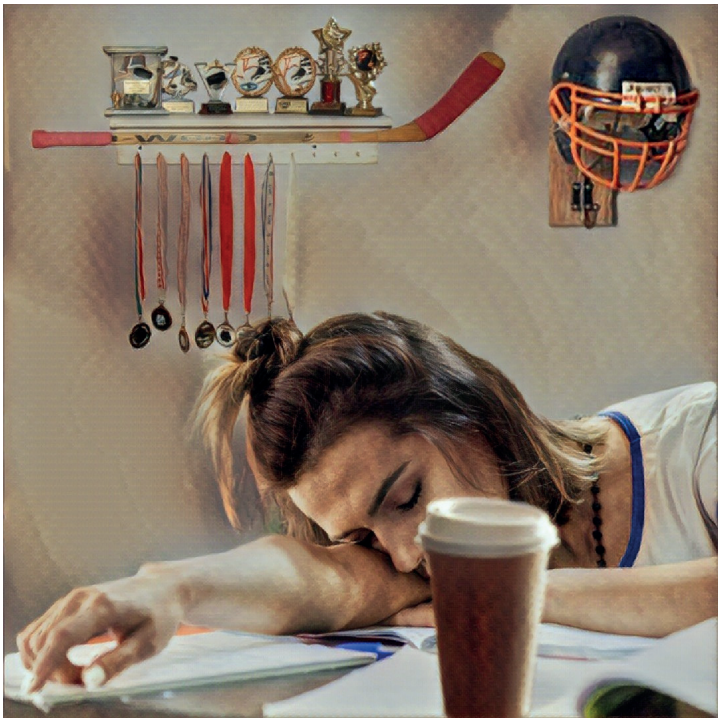
Different Methodological Perspectives



JYVÄSKYLÄN YLIOPISTO

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Esitetään Jyväskylän yliopiston kasvatustieteiden ja psykologian tiedekunnan suostumuksella
julkisesti tarkastettavaksi yliopiston vanhassa juhlasalissa S212
kesäkuun 13. päivänä 2018 kello 12.

Academic dissertation to be publicly discussed, by permission of
the Faculty of Education and Psychology of the University of Jyväskylä,
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UNIVERSITY OF JYVÄSKYLÄ

JYVÄSKYLÄ 2018

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Editors
Noona Kiuru
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Pekka Olsbo, Ville Korkiakangas
Publishing Unit, University Library of Jyväskylä

Cover photo by Ali Moazami-Goodarzi.

Permanent link to this publication: http://urn.fi/URN:ISBN:978-951-39-7450-3

URN:ISBN:978-951-39-7450-3
ISBN 978-951-39-7450-3 (PDF)

ISBN 978-951-39-7449-7 (nid.)
ISSN 0075-4625

Jyväskylä University Printing House, Jyväskylä 2018

ABSTRACT

Sorkkila, Matilda
The development of sport and school burnout among Finnish student-athletes across the first year of upper secondary school: different methodological perspectives
Jyväskylä: University of Jyväskylä, 2018, 54 p.
(Jyväskylä Studies in Education, Psychology and Social Research
ISSN 0075-4625; 617)
ISBN 978-951-39-7449-7 (nid.)
ISBN 978-951-39-7450-3 (PDF)

The present research investigated the co-development of sport and school burnout symptoms (sport- or school-related exhaustion, cynicism, and feelings of inadequacy) among student-athletes during the first year of upper secondary school. Furthermore, the environment- and individual-related predictors of sport and school burnout were examined. The participants were student-athletes ($N^{time\ 1}$=391; $N^{time\ 2}$=373) from six Finnish upper secondary sport schools and their 260 mothers and 188 fathers. Athletes and their parents filled out questionnaires at the beginning of upper secondary school. Athletes answered the questionnaires again at the end of the school year, and a subsample of high-level athletes (N=17) was interviewed. Both person- and variable-oriented approaches were used to analyze the data, in addition to a mixed methods approach that combined a quantitative person-oriented approach with a qualitative approach. The results showed that student-athletes were already at risk for symptoms of sport and school burnout in the beginning of upper secondary school. Furthermore, sport and school burnout symptoms increased and became more generalized over time, and school-related exhaustion spilled over into the sport context, which was evident in both the quantitative findings and the athletes' stories. High individual and parental expectations for a particular domain (sport or school) at the beginning of school were negatively related to burnout in the same domain but positively related to burnout in the other. Sport- and school-related achievement mastery goals protected from cynicism and feelings of inadequacy in the same domain, whereas school-related performance goals predicted cynicism in school over the first year. These findings could be used, for example, by health care professionals for the detection and early prevention of school and sport burnout.

Keywords: sport burnout, school burnout, success expectations, achievement goals, person-oriented approach, variable-oriented approach, mixed methods research

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TIIVISTELMÄ (FINNISH ABSTRACT)

Sorkkila, Matilda
Urheilu- ja koulu-uupumuksen kehitys suomalaisilla urheilulukiolaisilla ensimmäisen kouluvuoden aikana
Jyväskylä: University of Jyväskylä, 2018, 54 p.
(Jyväskylä Studies in Education, Psychology and Social Research
ISSN 0075-4625; 617)
ISBN 978-951-39-7449-7 (nid.)
ISBN 978-951-39-7450-3 (PDF)

Tämä väitöskirjatutkimus tarkasteli urheilu- ja koulu-uupumusoireiden kehitystä urheilulukiolaisilla ensimmäisen kouluvuoden aikana. Lisäksi tutkittiin ympäristöön ja yksilöön liittyviä uupumusoireiden selittäjiä. Tutkimuksen aineisto koostui urheilulukiolaisista ($n_{\text{mittauskerta 1}} = 391$; $n_{\text{mittauskerta 2}} = 373$) kuudesta eri suomalaisesta urheilulukiosta sekä heidän äideistään ($n = 260$) ja isistään ($n = 188$). Nuoret ja vanhemmat täyttivät kyselyt kouluajalla lukion alussa, jonka lisäksi nuoret täyttyvät kyselyt uudestaan ensimmäisen kouluvuoden lopussa ja 17 huippu-urheilijaa haastateltiin. Tutkimuksessa hyödynnettiin sekä henkilö- että muuttujakeskeistä tutkimusotetta, sekä monimenetelmätutkimusta (engl. *mixed methods research*), jossa yhdisteltiin määrällisiä ja laadullisia menetelmiä. Tulokset osoittivat, että tutkittavat kokivat urheilu- ja koulu-uupumusoireita jo ensimmäisen kouluvuoden alussa. Lisäksi uupumusoireet lisääntyivät ja laajenivat yhdeltä osa-alueelta toiselle kouluvuoden aikana. Erityisesti uupumusasteinen väsymys koulussa siirtyi myös urheilun osa-alueelle, mikä näkyi sekä määrällisissä tutkimustuloksissa että urheilijoiden omissa kertomuksissa. Vanhempien ja urheilijoiden korkeat odotukset yhdellä osa-alueella olivat positiivisesti yhteydessä uupumisoireisiin toisella osa-alueella. Oppimistavoitteet (engl. *mastery goals*) suojasivat kyynistymiseltä ja riittämättömyyden kokemuksilta samalla osa-alueella, kun taas suoritustavoitteet (engl. *performance goals*) koulussa olivat yhteydessä kyynistymiseen suhteessa opiskeluun. Tutkimustulokset osoittavat, miten tärkeää on tutkia koulu- ja urheilu-uupumusta samanaikaisesti kattavan kokonaiskuvan saamiseksi urheilulukiossa opiskelevien nuorten jaksamisesta. Tuloksia voidaan hyödyntää urheilulukiolaisten koulu- ja urheilu-uupumuksen ennaltaehkäisyssä ja hyvinvointipalveluiden suunnittelussa.

Avainsanat: urheilu-uupumus, koulu-uupumus, henkilökeskeinen tutkimusote, muuttujakeskeinen tutkimusote, monimenetelmätutkimus

ACKNOWLEDGEMENTS

First, I want to thank my main supervisor professor Kaisa Aunola for her endless encouragement, wisdom, and kindness. I have learned from Kaisa that anything is possible. I also want to thank Kaisa for her enthusiasm and high skills in quantitative research methods, which have inspired me. I have been truly privileged to learn from Kaisa, and hope that on my researcher path I can remain as modest and kind as she is.

I also want to express my gratitude to my second supervisor and to our project leader, docent Tatiana Ryba, for generously providing the data, and also for her expertise and guidance in qualitative research methods. This work could not have been done without her. Furthermore, I want to thank my other supervisors, associate professor Jaana Viljaranta and professor Katariina Salmela-Aro for their helpful comments and support.

I also want to thank Dr. Harri Selänne for his great ideas and suggestions and everyone in our research group. I would also like to express my special gratitude to professor Asko Tolvanen and Joona Muotka, who have offered me their insight and wisdom in methodological and statistical issues. Furthermore, I would like to thank my 'room-mate' Dr. Ali Moazami-Goodarzi and his lovely wife Dr. Maryam Zarra-Nezhad for their friendship, kindness, and support. Special thanks to Ali for all of the laughters and breakfasts at work, and also, for creating this wonderful cover photo for the thesis. Finally, I want to give my special gratitude to deceased professor Jari-Erik Nurmi for his unique wisdom and kindness. His presence will not be forgotten.

I want to thank my mother Liisa Sorkkila for all her support and kindness during this process and my father Matti Joensuu for his emails that always make my day better. Very special thanks to my daughters Isabel and Seela - my true life coaches - for their endless love and joy which helps me to remember what actually matters in life.

I dedicate this book to my life partner Henrik Ketola, towards whom words are not enough. Thank you for everything.

Jyväskylä, May 2018,
Matilda Sorkkila

LIST OF ORIGINAL PUBLICATIONS

I Sorkkila, M., Ryba, T. V., Aunola, K., Selänne, H., & Salmela-Aro, K. (in press). Sport Burnout Inventory — dual career form for student-athletes: Assessing validity and reliability in a Finnish sample of adolescent athletes. *Journal of Sport and Health Science*.

II Sorkkila, M., Aunola, K., & Ryba, T. V. (2017). A person-oriented approach to sport and school burnout in adolescent student-athletes: the role of individual and parental expectations. *Psychology of Sport and Exercise, 28*, 56-67.

III Sorkkila, M., Ryba, T. V., Selänne, H., & Aunola, K. (provisionally accepted). Development of school and sport burnout among adolescent student-athletes: A longitudinal mixed methods study. *Journal of Research on Adolescen*ce.

IV Sorkkila, M., Aunola, K., Salmela-Aro, K., Tolvanen, A., & Ryba, T. V. (2018). The co-developmental dynamic of sport and school burnout among student-athletes: the role of achievement goals. *Scandinavian Journal of Medicine and Science in Sport, 28,* 1731-1742.

Taking into account the comments and instructions given by the co-authors, the author of the present dissertation wrote the original research plan, conducted all parts of the qualitative and quantitative analyses, and wrote the reports of the four publications.

TABLES

CONTENTS

1 INTRODUCTION

"*It feels like there is just too much work, one just turns numb, it feels like it doesn't matter anymore. Although it's the wrong attitude because what one does now impacts the future job and everything… So it just feels like I don't have energy for school anymore and it feels like 'who cares' if I get a grade six… I know it's wrong and it needs to be changed and I want to change it, but it feels so insurmountable sometimes*."

Paula (pseudonym), aged 16, female slalom skier

A significant number of adolescents worldwide take part in organized sport while pursuing education (EU Guidelines on Dual Careers, 2012; National Association of Academic Advisors for Athletics, 2013). Although the health benefits of practicing youth sport are widely acknowledged (for a review, see Janssen & LeBlanc, 2010), there is increasing concern about student-athletes, who combine academic pursuits with high-level competitive sports (i.e., a dual career track) because succeeding in one domain often comes at the cost of the other (Ryba, Aunola, Kalaja, Selänne, Ronkainen, & Nurmi, 2016). The European Commission (2012) has acknowledged that high-achievement sports need to be organized in a socially responsible manner to avoid school dropout among young elite-level athletes. In Finland, where the present research was conducted, 40% of student-athletes reported that if they failed their school exams because of their athletic pursuits, they would quit school (Yrjölä, 2011).

One significant factor increasing the risk of school dropout is burnout (Bask & Salmela-Aro, 2013). Student-athletes may be particularly prone to both school and sport burnout because they need to strive for success in two intertwined domains (Ryba et al., 2016). School and sport burnout have been defined as sport- and school-related exhaustion, cynicism, and feelings of inadequacy as a student or an athlete, respectively (Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009; Raedeke & Smith, 2001). Investigating sport and school burnout among student-athletes is important not only because of the financial and social costs related to school and sport dropout but also because of adolescents' future life options and well-being. Both sport (Francisco, Arce, Vilchez, & Vales, 2016) and school (Salmela-Aro, Savolainen, & Holopainen,

2009) burnout have been shown to predict later depression. Furthermore, school burnout has been shown to predict gap years after upper secondary school and difficulties in entering higher education and employment (Upadyaya & Salmela-Aro, 2013). Despite the seriousness of the phenomenon, the simultaneous development of sport and school burnout has not been investigated.

The purpose of the present research was to investigate, for the first time, the concurrent development of sport and school burnout symptoms among student-athletes. The aim was threefold. The first aim was to validate an instrument to investigate sport burnout in a dual career context (Study 1). To the best of the author's knowledge, there is no extant instrument for this purpose. The second aim was to investigate the co-development of sport and school burnout symptoms by using several different methodological perspectives. Both person- (Studies 2 and 3) and variable-oriented (Study 4) approaches were used to obtain a comprehensive view of the co-development. Although both approaches use quantitative data, they differ both methodologically and theoretically (for a review, see Mäkikangas & Kinnunen, 2016). The person-oriented approach focuses on how variables cluster within individuals and assumes that the population is heterogeneous with respect to the mean levels and changes of the phenomenon, whereas the variable-oriented approach addresses the relationships between variables and assumes homogeneity with respect to the phenomenon (Mäkikangas & Kinnunen, 2016). In the present research, a person-oriented approach was used to identify the development of different burnout profiles (Studies 2 and 3), and the variable-oriented approach was applied to investigate the co-developmental dynamics of sport and school burnout symptoms over time (Study 4). A mixed methods approach was also used, in which a quantitative person-oriented approach was combined with a qualitative approach (thematic analysis; Study 3) to examine the qualitative descriptions regarding the well-being of student-athletes with different burnout profiles. The third aim of the research was to investigate the predictors of school and sport burnout symptoms among student-athletes. The predictors were situated within Smith's cognitive-affective framework of athlete burnout development (Studies 2 and 3), which proposes that burnout is a consequence of situational demands (e.g., high training load) chronically exceeding the available resources (e.g., social support; Smith, 1986; for the school context, see also the demands and resources model, Salmela-Aro & Upadyaya, 2014). It may be assumed that student-athletes face more demands than adolescents who are only athletes or only students; student-athletes need to perform in two simultaneous domains, so they may be more prone to symptoms of burnout. A social cognitive approach was also used to investigate how student-athletes' motivational aspirations (i.e., achievement goals) would predict the development of sport and school burnout symptoms (Study 4).

1.1 Student-athletes in the Finnish school context

In economically developed countries, including Finland, adolescent athletes are usually expected to combine their athletic aspirations with their education in order to have more life options and opportunities (Ryba et al., 2016). Although student-athletes usually consider education to be important, they tend to prioritize their athletic career, particularly those who compete at a high level (Christensen & Sorensen, 2009; Cosh & Tully, 2014; Ryba, Stambulova, Selänne, Aunola, & Nurmi, 2017). High-level sport careers are usually relatively short, with athletes retiring by 30–35 years old at the latest, and require intense emotional and physical investment to develop sport-specific skills. Youth athletes usually start competing around 7–8 years old, and elite athlete status is gained at around 10 years of experience (Blomqvist, Mononen, Konttinen, Koski, & Kokko, 2015). In most sports, the critical transition from junior to senior level sport takes place at 16–18 years old (Ryba et al., 2016). The process of transition has been described as highly stressful in terms of competition and training schedules (for a review, see Coutinho et al., 2016), and it has been estimated that only 10–30% of athletes can complete it successfully (Stambulova, Alfermann, Stater, & Cote, 2009).

Around the same time as student-athletes make their transition into senior sport, many of them move from comprehensive school to upper secondary school. In Finland, children start their compulsory basic education (comprehensive school) at the age of seven, and it lasts for nine years. At the age of 16, students can choose whether to continue into upper secondary education (*lukio* in Finnish), attend vocational education, or exit formal education. Vocational and upper secondary school both take approximately three years to accomplish. The vocational track is practical and prepares people for an occupation (e.g., craftsperson or technician). Upper secondary education offers a general academic education; if a student passes a national matriculation exam, that individual may continue into higher education, such as university. Adolescents can also apply for upper secondary schools that are specialized in sports. In upper secondary *sport* schools, school days include sport practice (e.g., additional training 3–4 times per week during school hours). The admission to upper secondary sport schools is very competitive; in addition to good school reports, accepted students must show high potential in their sport. There are 14 upper secondary sport schools in Finland; the present study focused on six of these (two from the northern, two from the central, and two from the southern parts of Finland).

It has been shown that the transition to upper secondary school may be a particularly stressful time for adolescents (Salmela-Aro et al., 2008). In addition to emerging academic competition, adolescents in upper secondary schools face unfamiliar expectations, social norms, and increasing academic expectations and demands (Salmela-Aro et al., 2008). Student-athletes may be under significant pressure from their sport due to the transition to the senior level

(Ryba et al., 2016), so athletes in upper secondary schools may be particularly vulnerable to stress and burnout in *both* the school and sport contexts. The present research focuses on the simultaneous evolvement of sport and school burnout symptoms among student-athletes during the first year of upper secondary school; to the best of the author's knowledge, this has not been examined before.

1.2 Sport and school burnout among adolescents

Sport burnout has been defined as a three-dimensional construct that includes sport-related exhaustion (i.e., chronic fatigue due to sport demands), sport-related cynicism (i.e., an indifferent attitude toward one's sport), and feelings of inadequacy as an athlete (Raedeke & Smith, 2001). Sport burnout has been associated with various negative outcomes, including reduced motivation toward one's sport, weakened sport performance, and eventually sport dropout (for a review, see Gustafsson, DeFreese, & Madigan, 2017), which renders the phenomenon significant to coaches, managers, and sport organizing bodies (Gustafsson, Lundvist, Podlog, & Lundkvist, 2016). Furthermore, sport burnout has been associated with lowered self-esteem (Gustafsson, Hassmen, Kenttä, & Johanssen, 2008; Gustafsson, 2007) and depressive symptoms (Francisco, Arce, Volchez, & Valez, 2016; Smith, Hill, & Hall, 2017). A Swedish study estimated that approximately 1–9% of competitive adolescent athletes in upper secondary sport schools experienced a high level of sport burnout symptoms (Gustaffson, Hassmen, Kenttä, & Lundqvist, 2007). Although the Swedish upper secondary sport schools are very similar to the Finnish ones, in Finland, no prevalence estimates of sport burnout have yet been conducted.

It has been estimated that approximately 10% of Finnish upper secondary school boys and 20% of girls experience symptoms of burnout (National Institute for Health and Welfare, 2017), characterized as school-related exhaustion, cynicism toward school, and feelings of inadequacy as a student (Salmela-Aro & Näätänen, 2005; Salmela-Aro, Kiuru, & Nurmi, 2009). However, it was recently shown that school burnout has increased among upper secondary school girls by 30% within the last two years (Salmela-Aro et al., 2016). School burnout among upper secondary school students seems to increase over school years (Salmela-Aro & Tynkkynen, 2012) and may spill over into other life domains (Salmela-Aro & Upadyaya, 2014). Similar to sport burnout, school burnout has been associated with various negative outcomes, including depressive symptoms (Fiorelli, De Stasio, Di Chiacchio, Pepe, & Salmela-Aro, 2017; Salmela-Aro et al., 2008) and lowered school achievement and engagement (Fiorelli et al., 2017; Salmela-Aro & Upadyaya, 2014). Moreover, it has been shown that burned-out students are four times more likely to drop out of school than their peers are (Bask & Salmela-Aro, 2013).

Although the serious consequences of burnout in both the sport and school settings have been separately documented for adolescents, the

development of simultaneous sport and school burnout symptoms has not yet been investigated. Among student-athletes, burnout may be evident in only one domain or in both domains simultaneously. Furthermore, burnout symptoms in one domain may spread to the other. However, there is no extant validated instrument for investigating simultaneous sport and school burnout. The two life domains of student-athletes are strongly intertwined and constantly affect each other. Consequently, from a methodological perspective, it is essential to examine burnout symptoms in the two domains simultaneously to obtain comparative results. Furthermore, parallel items in the sport and school domains would allow for certain statistical procedures (e.g., multilevel modeling across contexts). The first aim of the present research was to validate an instrument for examining sport burnout, which would allow for parallel investigation of sport and school burnout among Finnish student-athletes. The second aim was to investigate the co-development of sport and school burnout symptoms by using different methodological approaches (i.e., quantitative person- and variable-oriented approaches; a mixed methods approach) to gain a holistic understanding of the previously unexamined phenomenon.

1.3 The development of sport and school burnout within the resources-demands framework

Smith (1986) suggested in his cognitive-affective theory that sport burnout develops as a result of chronic stress. The conceptualization of stress is based on the work of Lazarus (Lazarus, 1999; Lazarus & Folkman, 1984), which proposes that stress is an ongoing process, or complex system, in which individuals interact with environments, make different kinds of cognitive appraisals of the situation, and try to cope with any arising issues. Lazarus defined stress as "a relationship with the environment that the person appraises as significant for his or her wellbeing and in which the demands tax or exceed available coping resources" (Lazarus & Folkman, 1986, p. 63). Emphasis is thus given to the relationship between environment and individual with certain characteristics, instead of seeing stress as a unidimensional variable.

If stress becomes chronic, burnout may arise. In Smith's (1986) theory, burnout is an outcome of an individual constantly perceiving that the situational demands (e.g., increased training load) exceed the available resources. These demands and resources can be related to either the environment or the individual. According to Smith's (1986) theory, sport burnout and stress evolve in parallel as a four-stage process. First, individuals face situational demands, such as a high training load or low social support. Second, cognitive appraisal of the situation takes place, wherein individuals interpret the demands differently: while some perceive the situation as challenging, others interpret it as threatening. Third, if the situation is perceived as threatening, individuals experience an aversive physiological response, such

as tension or anxiety. Fourth, if the process continues, in order to cope with the aversive physiological response, emotional, psychological, and sometimes physical withdrawal from an activity that used to be enjoyable takes place. In the model, all four stages are affected by motivational and personality factors (e.g., self-efficacy or trait anxiety). Although the final stage of the model has been criticized for not sufficiently differentiating between sport withdrawal and sport burnout (Raedeke, 1997), the overall model offers a holistic view of the development of sport burnout and has significant empirical support (e.g., Gould, Uldry, Tuffey, & Loehr, 1996; Kelley, Erklund & Ritter-Taylor, 1999; Raedeke & Smith, 2004).

The development of school burnout has been similarly investigated from the demands-resources perspective (Salmela-Aro & Upadyaya, 2014) by using the demands-resources model, which was originally developed in the work context (Demerouti, Bakker, Nachreiner, & Shaufeli, 2001). The model assumes that two underlying processes may lead to burnout: 1) an effort-driven energetic process characterized by overtaxing and exhaustion, in which high study demands diminish students' energy and lead to burnout and 2) a motivational process in which available resources lead to engagement and hinder the development of burnout. It has been shown that high study demands do positively predict school burnout and that personal resources (e.g., self-efficacy; life satisfaction) negatively predict school burnout (Salmela-Aro & Upadyaya, 2014). Although the cognitive-affective model in the sport context (Smith, 1986) and the demands-resources model in the school context (Salmela-Aro & Upadyaya, 2014) differ in their theoretical underpinnings (the former model focuses on the cognitive and affective nature of burnout development, whereas the latter model describes burnout development from parallel energetic and motivational processes) the two models explain the development of burnout similarly in terms of a mismatch of resources and demands. Consequently, in the present research, the development of sport and school burnout was viewed from the perspective of sport- and school-related resources and demands. More specifically, a 2 x 2 framework was used to differentiate between environment- and individual-related demands and resources. The Smith (1986) model was applied because of its wide use in the sport psychology literature (e.g., Gould, Uldry, Tuffey, & Loehr, 1996; Kelley, Erklund & Ritter-Taylor, 1999; Raedeke & Smith, 2004), although the demands-resources model in the school context (Samlela-Aro & Updyaya, 2013) could describe the phenomenon equally well. In line with Smith's (1986) model, it was expected that student-athletes may face multiple demands, as they need to strive for success in sport and school simultaneously, and that they may therefore be particularly vulnerable to burnout. It is possible, however, that student-athletes also have resources, such as support from both the team and school. The third aim of the present research was therefore to investigate different individual- and environment-related predictors of sport and school burnout by using Smith's model as a theoretical framework.

1.3.1 Individual and parental success expectations

One factor that may be investigated among student-athletes within the cognitive-affective model of burnout (Smith, 1986) is sport- and school-related success expectations. The extent to which an individual expects to succeed can be either environment-related (e.g., parental expectations) or individual-related (e.g., student-athletes' own expectations). Previous research has shown that individual high success expectations may be negatively related to sport burnout (Hill, Hall, Appleton, & Kozub, 2008; Lemyere, Hall, & Roberts, 2008), and so can be seen as a resource, but that athlete-rated high parental expectations may be positively related to sport burnout (Flett & Hewitt, 2006; Hill, 2009), and so can be seen as a demand. Hill (2009) explained that high expectations of others may be perceived as a trap because the individual has no control, so these expectations may be related to burnout, whereas high self-expectations may relate to high feelings of competence, which protect from burnout. The role of parent-rated parental expectations has not been investigated (only athlete-rated expectations), and therefore it is unknown how actual rather than perceived parental expectations relate to the development of sport burnout. To the best of the author's knowledge, success expectations have never been investigated in relation to school burnout or for student-athletes. In the case of student-athletes, it is of particular interest whether individual and parental success expectations in one domain have an opposing effect on burnout in the other. In Study 2, the role of parental and individual success expectations in student-athletes' sport and school burnout was investigated within the framework of Smith's (1986) cognitive-affective model.

1.3.2 Motivational perspective of burnout development

In line with the cognitive-affective model (Smith, 1986), Gould (1996) reported that athlete burnout originates in stress, which develops from an interplay between situational and personal factors. However, he emphasized the role of motivation: if sport participation was considered to be a threat to self-worth (e.g., after several failures), a motivational shift took place, from the desire to succeed to physical and psychological disengagement. Gould (1996) proposed that burnout is "motivation gone awry" (the person is no longer motivated to practice sports; p. 275). It has been argued from a social cognitive perspective that perhaps instead of lowered motivation, the individual has maladaptive motivational goals (i.e., outperforming others); after failure, these goals develop into a perception of the achievement context as threatening and then to burnout symptoms (Lemyere, Hall, & Roberts, 2008). Consequently, having more adaptive motivational patterns (e.g., wanting to develop) may be protective against sport burnout even when facing failure (Lemyere et al., 2008). Indeed, certain research among adolescent athletes has shown that high training load in itself may not be associated with sport burnout symptoms (Gustafsson et al., 2007).

According to achievement goal theory (Nicholls, 1984), goals give activity meaning and purpose. Instead of focusing on *what* individuals try to achieve, achievement goal theory is concerned with *why* individuals try to achieve something (Wentzel, 1993). Achievement goals have been divided into performance goals, conceptualized as being motivated by normative mastery and outperforming others, and mastery goals, described as being motivated by personal mastery and development (Nicholls, 1984). Performance-orientation has been shown to be related to the belief that success requires ability, whereas mastery-orientation has been shown to be related to the belief that success requires effort, interest, and collaboration with peers (Duda & Nicholls, 1992).

Achievement goal theory might be particularly useful when aiming to understand how student-athletes balance between sport and school since their lives function around two achievement contexts (see Duda & Nicholls, 1992). Duda and Nicholls (1992) showed that although mastery and performance goals cut across school and sport domains (i.e., they were similar), little cross-domain generality was found in perceptions of satisfaction. Whereas satisfaction in sport was related to performance-orientation, satisfaction in school was related to mastery-orientation. Nevertheless, only few studies thus far have investigated sport and schoolwork simultaneously from achievement goal perspective.

When investigated separately on sport and school domains, it has been shown that mastery goals protect from sport burnout (Isoard-Gautheur, Guillet-Descas, & Duda, 2013; Lemyere et al., 2008), whereas performance goals increase the risk of sport burnout (Isoard-Gautheur et al., 2013; Lemyere et al., 2008). However, contradictory evidence also exists. For example, Appleton, Hill and Hall (2009) showed that among elite junior athletes neither performance- nor mastery-orientation predicted sport burnout. In school settings, it has been shown that students with mastery-related goals reported lower levels of school-related inadequacy and cynicism than their peers, whereas students with performance-related goals reported more symptoms of school-related exhaustion, cynicism, and inadequacy than those with mastery-related goals (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008; 2012). Nevertheless, since achievement goals in sport and school have not been investigated simultaneously among student-athletes, it is unknown whether, for example, performance goals in one domain (e.g., sport) impact burnout in the other (school). It is possible that athletes who are performance- or mastery-oriented in one domain would prefer to invest time and energy in that domain because they are passionate about it, which results in the *other* domain becoming a source of stress due to the time and effort it requires, leading to burnout symptoms. Student-athletes often experience role conflicts and tensions between their sport-related passion and the time they must devote to school (Ryba et al., 2017). Furthermore, it has been proposed that adolescents' investment in sport often comes at the expense of school work (Duda & Nicholls, 1992). The present research also investigated the role of student-

athletes' achievement goals, defined as the motivation for competence-related behavior, in the development of sport and school burnout (Study 4).

1.4 Aims of the empirical studies

This research aimed to investigate the simultaneous development of sport and school burnout symptoms among adolescent student-athletes across the first year of upper secondary school by using different methodological approaches. Different individual and environment-related predictors of the development of sport and school burnout symptoms were examined.

Study 1 was carried out to validate the scale intended to assess sport burnout in a dual career context.

Study 2 addressed different profiles of student-athletes in the beginning of upper secondary school based on sport and school burnout symptoms and the role of individual and parental success expectations. The following research questions were investigated:

1) Do the sport and school burnout profiles in adolescents differ at the beginning of upper-secondary school? What proportion of athletes show a particular profile?
2) How do athletes' own expectations of success in sport and school predict the likelihood of a certain burnout profile?
3) How do mothers' and fathers' expectations of their child's success in sport and school predict the likelihood of a certain burnout profile?

Study 3 investigated the development of sport and school burnout across the first year of upper secondary school by using a mixed methods approach. The following research questions were examined:

1) What kind of burnout profiles, based on the level and development of sport and school burnout symptoms during the first year of upper secondary school, can be identified among student-athletes?
2) What kinds of themes related to resources and demands emerge from the interviews conducted with a subsample of elite athletes, and to what extent these themes are different among athletes with different burnout profiles?

Finally, Study 4 examined the co-developmental dynamics of sport and school burnout across the first year of upper secondary school and the role of achievement goals as predictors of this development. The following research questions were investigated:

1) How does sport and school burnout, that is, sport and school related exhaustion, cynicism, and inadequacy, co-evolve across the first year of upper secondary school among student-athletes?
2) To what extent do achievement goals in sport and school predict sport and school burnout at the beginning and end of the first school year?

In the previous literature, the background variables of gender and type of sport (individual versus team sport) have been related to burnout in sport (Isoard-Gautheur, Guillet-Descas, Gaudreau, & Chanal, 2015; Goodger et al., 2007) and school (Salmela-Aro et al., 2008; 2009; Salmela-Aro & Tynkkynen, 2012), so these variables were accounted for in Studies 1 and 2. In Study 2, the school grade point average (GPA) and sport competition level were also controlled for due to previously demonstrated associations with burnout in school (e.g., Salmela-Aro et al., 2008; 2009; Walburg, 2014) and sport (Goodger et al., 2007).

2 METHOD

The studies within the present thesis are part of the Finnish Longitudinal Dual Career Study (Ryba et al., 2016), which follows Finnish adolescent student-athletes across upper secondary school and investigates various risk and resilience factors related to dual career construction. The studies in this thesis examine sport and school burnout in the beginning of upper secondary school (Time 1; Studies 1 and 2) or across the first year of upper secondary school (from Time 1 to Time 2, six months later; Studies 3 and 4). The same sample is used in all four sub-studies. The participants, procedures, and measures are briefly described below. More information regarding the validity and reliability of the scales are presented in the original research papers.

2.1 Participants

At Time 1 (September 2015) the participants were 391 student-athletes (51% female) with an average age of 16 (*SD* = 0.17) from six different Finnish upper secondary sport schools (two from southern, two from central, and two from northern Finland) and their 260 mothers and 188 fathers. Of all 668 parents who were invited, 67% participated (the response rate was 66% and 48% for mothers and fathers, respectively). The education backgrounds of the parents varied. Mothers most frequently reported having a university degree (32%), and fathers reported a vocational degree (35%).

At Time 2 (March 2016), 18 athletes had dropped out, resulting in 373 athletes (52% female). The athletes competed on various levels, ranging from regionals to the World Championships. Half (50%) practiced individual sports (e.g., gymnastics, judo), and half practiced team sports (e.g., football, ice hockey). The athletes had been competing for an average of seven years (*SD* = 2.41), and they practiced or engaged in activities related to their sport for an average of 25 hours (*SD* = 8.99) per week. At Time 1, the athletes had a GPA of 8.85 (possible range 4–10; *SD* = 0.62), and at Time 2, it was 8.24 (*SD* = 0.86). The majority of athletes expected to obtain an education up to a Master's degree

(68%) and compete at the World Championships or Olympics level (60%). At Time 2, 17 of the most promising athletes (10 female) who played on an international level were selected for interviews. Eleven of these elite-level athletes practiced individual sports, six practiced team sports, and their average GPA was 7.86 (*SD* = 0.93).

2.2 Procedure

Before participant recruitment, an ethical approval for the overall study was obtained from ethical board of University of Jyväskylä. The participating upper secondary sport schools were contacted through the National Network of Sports Academies. The participants first provided informed consent to acknowledge their voluntary involvement and then filled in a battery of questionnaires during class at Time 1 and Time 2. In Finland, parental informed consent is not required from participants over 15 years of age. At Time 2, the 17 elite athletes were interviewed individually by a sports medical doctor in a private space within the school. The interviews lasted for 40 minutes, on average.

2.3 Measurements

2.3.1 Sport burnout

In all four studies, sport burnout was measured with the Sport Burnout Inventory — Dual Career Form (SpBI-DC; Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, 2017). The scale consists of 10 items that measure the three dimensions of sport burnout: exhaustion (4 items; e.g., *I often sleep poorly because of matters related to my sport*), cynicism (3 items; e.g., *sport doesn't interest me anymore*), and feelings of inadequacy as an athlete (3 items; e.g., *I used to achieve more in my sport*). All items were rated on a 5-point Likert scale (1 = *completely disagree*; 5 = *completely agree).* The respective Cronbach's alpha reliability coefficients for the three subscales were 0.74, 0.80, and 0.78 at Time 1 and 0.77, 0.88, and 0.81 at Time 2.

2.3.2 School burnout

In Studies 2, 3, and 4, school burnout was examined with the School Burnout Inventory (SBI; Salmela-Aro & Näätänen, 2005; Salmela-Aro, Kiuru, Nurmi, & Leskinen, 2009). The SBI measures school burnout with 10 items underlying the three relevant dimensions: exhaustion (4 items; e.g., *I often sleep poorly because of matters related to my schoolwork*), cynicism (3 items; e.g., *school doesn't interest me anymore*), and feelings of inadequacy as a student (3 items; e.g., *I used to achieve*

more in school). All items were rated on a 5-point Likert scale (1 = *completely disagree*; 5 = *completely agree).* The respective Cronbach's alphas for the subscales were 0.82, 0.80, and 0.78 at Time 1 and 0.83, 0.83, and 0.82 at Time 2.

2.3.3 Depressive symptoms

In Study 1, depressive symptoms were measured with the Internalizing Symptoms subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1998), which consists of seven mother-rated items (e.g., *She/he is often sad*) rated from 1 (*strongly disagree*) to 5 (*strongly agree*). The Cronbach's alpha for the scale was 0.71.

2.3.4 Self-esteem

In Study 1, athletes' overall self-esteem was measured by Rosenberg's self-esteem scale (Rosenberg, 1965), which consisted of five items (e.g., *I feel I have a number of good qualities*) rated from 1 (*strongly disagree)* to 5 (*strongly agree*). The Cronbach's alpha for the scale was 0.77.

2.3.5 Sport task values

In Study 1, sport task values were measured by a scale modified from Eccles et al. (1983) that consisted of 13 items measuring the three dimensions of interest values (5 items; *How much do you like your sport*?) rated from 1 (*not at all*) to 5 (*very much*); importance values (4 items; e.g., *How important is it for you to do well in competitions?*) rated from 1 (*not at all important*) to 5 (*very important*); and utility values (4 items; e.g., *How useful is practicing your sport for what you want to do after you graduate or go to work?*) rated from 1 (*not at all useful*) to 5 (*very useful*). The Cronbach's alphas for the three subscales were 0.78, 0.81, and 0.80, respectively.

2.3.6 Individual success expectations in sport

In Study 2, sport- and school-related individual success expectations (the extent to which someone expects to succeed in a certain task and is not afraid of failure) were measured with the Success Expectations Scale, which is a subscale of the Strategy and Attribution Questionnaire (Nurmi, Salmela-Aro, & Haavisto, 1995). The scale was modified separately for the sport (5 items; e.g., *when I go into sport competitions, I usually expect to do well*) and school contexts (5 items; e.g., *when I get ready to start a school task, I am usually certain that I will succeed in it*). The answers were rated from 1 (*completely disagree*) to 4 (*completely agree*). The Cronbach's alpha was 0.63 in the sport context and 0.77 in the school context.

2.3.7 Parental success expectations

In Study 2, parental success expectations were measured with a modified Parental Beliefs Questionnaire (Frome & Eccles, 1998), which was adapted separately for the sport (3 items; e.g., *How well do you think your child will do at sport later on?*) and school contexts (6 items; e.g., *In general, how well do you think your child will do at school later on?*). The answers were rated from 1 (*not very well*) to 4 (*very well*). For sport-related success expectations, the Cronbach's alphas were 0.80 for mothers and 0.73 for fathers, and for school-related success expectations, the results were 0.89 and 0.91, respectively.

2.3.8 Sport- and school-related achievement goals

In Study 4, sport- and school-related achievement goals were measured with the Perception of Success Questionnaire (Roberts, Treasure, & Balague, 1998). The scale consists of 10 items that were adapted separately for the sport and school contexts. Six items measured mastery orientation (e.g., in the sport context: *When playing sport, I feel most successful when I try hard*), and four items measured performance orientation (e.g., in the sport context: *When playing sport, I feel most successful when I beat other people*). The answers were rated from 1 (*strongly disagree*) to 5 (*strongly agree*). The respective Cronbach's alphas were 0.74 and 0.86 for the mastery and performance-orientation subscales in the sport context and 0.88 and 0.91 in the school context.

2.3.9 Background variables

The background variables of gender (boy or girl) and type of sport (individual or team) were controlled for in Studies 1 and 2. In Study 2, school achievement (GPA; possible range 4–10) and level of sport competition (ranging from regional to Olympics level) were also accounted for.

2.4 Analysis strategies for the four studies

All quantitative analyses were carried out with the M-plus package (Muthén & Muthén, 1999–2016).

The purpose of Study 1 was to validate the SpBI-DC. The structure of the scale was investigated by comparing the goodness of fit of a one-factor model to a three-factor model (i.e., three separate burnout subscales as separate factors). Item and scale reliability were addressed by examining squared correlations between factor and item, and standardized factor loadings were examined for measuring the structural validity of each item. Internal consistency of the SpBI-DC was assessed by estimating both factor score scale reliabilities and Cronbach's alpha reliabilities. Finally, convergent and divergent validity were investigated by examining how parent-rated depressive symptoms (convergent

validity) and sport-related task values and self-esteem (divergent validity) would predict sport burnout, while controlling for gender and type of sport.

Study 2 aimed to identify which burnout profiles, based on sport and school burnout symptoms, could be found among student-athletes in the beginning of upper secondary school and how individual and parental expectations would predict the likelihood of a certain profile. First, a measurement model was conducted for sport and school burnout from the three burnout subscales (exhaustion, cynicism, and feelings of inadequacy). Next, based on the latent school and sport burnout constructs, latent profile analysis (LPA) was used to identify different burnout profiles. Finally, individual and parental expectations were added to the LPA model to predict class membership by using multinomial logistic regression.

Study 3 aimed to investigate the development of sport and school burnout across the first year of upper secondary school by using an embedded mixed methods design. First, growth mixture modeling (GMM) was conducted to investigate different burnout profiles based on the levels and changes of sport and school burnout symptoms. Second, a thematic analysis was conducted by using data from semi-structured interviews of 17 high-level athletes to investigate factors related to their well-being. Third, the burnout profiles of the high-level athletes were identified, and their qualitative descriptions of well-being and ill-being were compared across profiles.

Finally, Study 4 aimed to examine the co-development of the subscales of sport and school burnout across the first year of upper secondary school by using cross-lagged structural equation modeling (SEM) and examining how achievement goals would predict the burnout dimensions over time. First, measurement models for burnout subscales were constructed from the relevant items, and invariance of the models was tested over time. Measurement models were also constructed for achievement goals. Next, cross-lagged models were constructed for sport and school-related exhaustion, cynicism, and inadequacy, separately for each subscale. Finally, achievement goals in sport and school were added as predictors of each burnout scale in Time 1 and Time 2.

Table 1 presents a summary of the methods for the four studies.

TABLE 1 Overview of the original studies

Study	Measurement points	Approach/Orientation	Variables	Data analysis methods
Study 1 Sport Burnout Inventory – Dual Career Form for student-athletes: assessing validity and reliability in a Finnish sample of adolescent athletes	Time 1 (N= 391)	Quantitative/ Variable-oriented	Sport burnout Depressive symptoms Self-esteem Sport task values Gender Type of sport (individual vs. team)	Confirmatory factor analysis
Study 2 A person-oriented approach to sport and school burnout in adolescent student-athletes: The role of individual and parental expectations	Time 1 (N=391 athletes, 260 mothers, and 188 fathers)	Quantitative/ Person-oriented	Sport burnout School burnout Individual success expectations in sport Individual success expectations in school Parental success expectations in sport Parental success expectations in school Gender Type of sport (individual vs. team) Competition level School achievement	Structural equation modeling Latent profile analysis
Study 3 Development of school and sport burnout in adolescent student-athletes: A longitudinal mixed methods study	Time 1 (N=391[1]) Time 2 (N=373[1]; N=17[2])	Mixed methods Sequential Embedded/ Person-oriented	Sport burnout School burnout	Growth mixture modeling Thematic analysis
Study 4 The co-developmental dynamic of sport and school burnout among student-athletes: The role of achievement goals	Time 1 (N=391) Time 2 (N=373)	Quantitative/ Variable-oriented	Sport burnout School burnout Achievement goals in sport Achievement goals in school	Cross-lagged structural equation modeling

Note. [1] = quantitative sample; [2] = qualitative sample.

3 OVERVIEW OF THE ORIGINAL STUDIES

3.1 Study I

Sport Burnout Inventory – dual career form for student-athletes: Assessing validity and reliability in a Finnish sample of adolescent athletes

Study 1 examined the validity and reliability of the SpBI-DC among student-athletes. The results showed that a three-factor model (i.e., separate factors for the three different burnout dimensions) or a second-order factor model (i.e., three related factors explained by overall sport burnout) described the data better and showed better factorial validity and internal consistency than a one-factor model. The SpBI-DC demonstrated convergent validity; the more depressive symptoms adolescents showed, the more sport burnout symptoms they reported. The SpBI-DC also had divergent validity; the higher self-esteem and sport task values athletes had, the fewer sport burnout symptoms they reported. The results suggest the SpBI-DC is a valid and reliable measure to investigate sport burnout among student-athletes.

3.2 Study 2

A person-oriented approach to sport and school burnout in adolescent student-athletes: the role of individual and parental expectations

Study 2 examined what kind of profiles based on sport and school burnout symptoms can be identified among student-athletes in the beginning of upper secondary school and how individual and parental success expectations in sport and school would predict the likelihood of a certain profile. The results revealed four different burnout profiles: 1) "well-functioning," shown by 60% of athletes and characterized by little or no sport and school burnout symptoms;

2) "mild sport burnout," 28% of athletes and characterized by a mild level of sport burnout symptoms (more than 0.5 standard deviations above the sample mean); 3) "school burnout," 9.6% of athletes and characterized by school burnout symptoms (more than one standard deviation above the sample mean); and 4) "severe sport burnout," 2.7% of athletes and characterized by a severe level of sport burnout symptoms (two standard deviations above the sample mean). The results also showed that student-athletes' and mothers' success expectations in sport and school, and fathers' success expectations in school, were significant predictors of the likelihood of a certain burnout profile. High parental and individual success expectations in one domain increased the likelihood that the student-athlete would show a well-functioning profile in the same domain. By contrast, high success expectation in one domain seemed to increase the likelihood of burnout symptoms in the other.

Overall, the results suggest that student-athletes may already show sport and school burnout symptoms at the very beginning of upper secondary school. Although the majority of the student-athletes were well-functioning at this time point, nearly a third showed mild sport burnout symptoms, which might increase in time. The results also highlight the importance of investigating sport and school burnout simultaneously among student-athletes. Student-athletes with high individual and parental expectations in sport may have few burnout symptoms in sport but be burned out in school. Similarly, student-athletes with high success expectations in school may have few school burnout symptoms but be burned out in sport. Consequently, burnout needs to be investigated within and across domains to gain a comprehensive understanding of student-athletes' well-being.

3.3 Study 3

Development of school and sport burnout among adolescent student-athletes: A longitudinal mixed methods study

Study 3 investigated development of school and sport burnout among student-athletes across the first year of upper secondary school by using a sequential embedded mixed methods design. The aim of the study was threefold. The first goal was to see which profiles, based on the level of and change in school and sport burnout symptoms, existed among student-athletes. The second goal was to investigate whether, and to what extent, elite athletes' qualitative descriptions of well-being and ill-being differ between burnout profiles. The third aim was to extend the stress-based model of sport burnout development (Smith, 1986) into a dual career context. This aim was addressed by examining the environment- and individual-related demands and resources that would arise, conveyed in the athletes' own stories.

Four burnout profiles were identified among student-athletes: (1) "non-risk," shown by 42.1% of participants and characterized by a below-average

amount of school and sport burnout symptoms that remained stable over time; (2) "burnout risk," shown by 35.2% of participants and characterized by a relatively high initial level of sport and school burnout symptoms that remained stable in the school context but decreased in the sport context; (3) "developed burnout," shown by 12.8% of participants and characterized by a low initial level of school and sport burnout symptoms that both increased over time; and (4) "well-functioning," shown by 12.7% of participants and characterized by a low initial level of sport and school burnout symptoms that did not change over time. Thematic analysis was carried out from the low-structured interviews of 17 pre-selected elite athletes in order to understand factors related to their wellbeing and ill-being, after which, it was examined what kind of quantitative profiles the interviewed athletes showed. Of the interviewed athletes, seven showed a non-risk profile, and nine had a burnout risk profile. One athlete showed a well-functioning profile, but his interview was excluded from further analysis because it represented only a single case in the data. Finally, the qualitative themes were compared across the two burnout profiles, making the qualitative analysis embedded in the quantitative analysis. Comparison of the two burnout profiles showed that that the interviewed elite athletes characterized by a non-risk profile reported more well-being-related factors, such as social support, adaptability, and intrinsic motivation for sport, than those with a burnout risk profile did. Furthermore, those showing a burnout risk profile reported more factors related to ill-being (school-related stress, disempowering coaching, inadequate recovery, and little social life outside of sport and school) than those with a non-risk profile did.

Overall, the quantitative and qualitative results supported each other regarding the development of student-athletes' sport and school burnout across the first school year, and these results extend the Smith (1986) model to a dual career context. The results suggest that resources-related factors, such as social support, may be protective against burnout and that demands-related factors, such as school-related stress, may contribute to burnout. The results indicate that among student-athletes, school-related stress may be particularly crucial in the development of sport and school burnout, suggesting that school burnout may spill over into the sport context. This data can be used, for example, when planning for screening tools and interventions to prevent student-athletes' burnout.

3.4 Study 4

The co-developmental dynamic of sport and school burnout among student-athletes: the role of achievement goals

Study 4 examined the co-developmental dynamic of sport and school burnout symptoms among student-athletes across the first year of upper secondary school and how achievement goals in sport and school would predict the

developmental dynamic of both burnout dimensions. The results of cross-lagged SEM showed that sport and school burnout were stable across the school year: school burnout at the beginning of the year predicted school burnout at the end of the year, and sport burnout at the beginning of the year predicted sport burnout at the end. School exhaustion at the beginning of the school year predicted sport exhaustion at the end. Sport-related mastery goals were negatively associated with sport-related cynicism and feelings of inadequacy; school-related mastery goals were negatively associated with school-related cynicism and feelings of inadequacy. Finally, performance goals in school were positively associated with school-related cynicism.

Overall, the results indicate that sport and school burnout symptoms are stable over time and that school-related exhaustion predicts later sport-related exhaustion. Furthermore, mastery orientation in one domain may protect from cynicism and feelings of inadequacy within the same domain. These results are particularly useful for health care practitioners and coaches who wish to monitor burnout symptoms among student-athletes.

4 DISCUSSION

4.1 Summary of the findings

This research investigated the development of sport and school burnout symptoms among student-athletes during the first year of upper secondary school. First, an instrument for measuring sport burnout within a dual career context was validated to obtain parallel instruments for measuring sport and school burnout among student-athletes. Second, the research examined burnout profiles based on sport and school burnout symptoms among student-athletes at the beginning of upper secondary school and how individual and parental success expectations predicted the likelihood of a certain profile. Third, the development of sport and school burnout across the first year was investigated by using a mixed methods approach, in which burnout profiles, based on the level of and change in sport and school burnout symptoms, were identified and then elite athletes' qualitative descriptions were compared in the burnout risk and non-risk profiles. Finally, the development of sport and school burnout dimensions across the first year was examined via cross-lagged SEM, which contributed to the previous research by offering a dynamic variable-oriented approach to the phenomenon.

The results of the research showed that the SpBI-DC is a reliable and valid instrument for investigating sport burnout among student-athletes. Second, the results suggested that certain student-athletes already show sport and school burnout symptoms in the beginning of upper secondary school and that the symptoms increase and become more generalized over time. School-related exhaustion in particular seems to spill over into the sport context, which was evident in both athletes' verbal accounts (Study 3) and those results concerning the longitudinal dynamic between sport and school burnout (Study 4). Moreover, it was shown that high success expectations in one domain may be negatively associated with burnout in the same domain but positively associated with burnout in the other. Finally, mastery orientation in sport or school was shown to be protective against cynicism and feelings of inadequacy

in the respective domains, whereas performance goals in school were positively associated with school-related cynicism.

4.2 The co-development of sport and school burnout

The first aim of the present research was to validate an instrument for examining sport burnout in a dual career setting. The results showed that the SpBI-DC is a valid and reliable tool for examining sport burnout among Finnish student-athletes and could therefore be considered an appropriate instrument in the present research.

The second aim was to investigate the development of sport and school burnout symptoms among student-athletes across the first year of upper secondary school. The results of Study 2 showed that at the beginning of the school year, approximately 60% of the student-athletes were well-functioning, and 27% had mild sport burnout symptoms. School burnout symptoms were shown by 9.7% of the student-athletes, which is in line with the findings from Finnish upper secondary school students that around 10% of students are burned out in school (e.g., Salmela-Aro et al., 2008). Severe sport burnout symptoms were shown by 2.8% of student-athletes, which is similar to the findings from Sweden (Gustafsson et al., 2007).

Over time, the symptoms of both sport and school burnout increased on mean-level and became more generalized (i.e., overlapped; Studies 3 and 4). In the beginning of the school year, the profiles of sport and school burnout were distinct and context-specific (i.e., profiles were characterized by school *or* sport burnout), whereas at the end of the school year, the profiles were characterized by *both* sport and school burnout symptoms. The results of Study 3 show that at the end of the school year, 42.1% of the student-athletes showed a non-risk profile, 35.2% showed a risk profile (sport and school burnout symptoms), 12.8% showed a developed risk profile (*increased* sport and school burnout symptoms), and only 12.8% were well-functioning. The variable-oriented approach (Study 4) supported the person-oriented findings (Studies 2 and 3), as by the end of the school year, the association between the two constructs increased and school-related exhaustion affected the sport context (i.e., school-related exhaustion at the beginning of the school year predicted sport-related exhaustion at the end). These findings are in line with the previous research conducted in school settings showing that school burnout spills over to other life domains over time (Salmela-Aro, Holopainen et al., 2009; Salmela-Aro & Tynkkynen, 2008). There are similar results from clinical settings: burnout may generalize to other life areas over time and begin to overlap with depression (Bianchi, Schonfeld, & Laurent, 2015).

It should also be critically evaluated, how and *if* burnout actually differs from depression. The proposed key distinction between burnout and depression is that burnout is related to a specific context (e.g., work, sport, school), whereas depression is pervasive and context-free by affecting all areas

of life (Maslach, Shaufeli, & Leiter, 2001). However, a recent review suggests that the distinction between burnout and depression may be conceptually fragile, and burnout dimensions (exhaustion, cynicism and inadequacy) may all be components of wider depressive symptoms (Bianchi et al., 2015). It is particularly unclear how the final and most severe stage of burnout differs from clinical depression, as both conditions can be pervasive (Bianchi et al., 2015). Burnout and depression have been shown to have a moderate to high positive correlation, particularly strong relationship existing between exhaustion and depression (for a review, see Bianchi et al., 2015). Some studies have found that exhaustion may correlate more strongly with depression than what it does with cynicism and inadequacy (Bianchi, Boffy, Hingray, Truchot, & Laurent, 2013; Bianchi, Schonfeld, & Laurent, 2014), which brings up the question whether exhaustion is actually the only true component of burnout (Gustafsson, 2017), or whether exhaustion is merely depression (Bianchi et al., 2015). The findings of the present dissertation (Study 1) are partly in line with the results of Bianchi and others (2013; 2014), as it was shown that from the three sport burnout subscales only exhaustion correlated with depressive symptoms. However, the correlation between exhaustion and depressive symptoms was only weak, indicating that the two concepts are separate entities, at least among student-athletes in the beginning of upper secondary school. Furthermore, in the present dissertation, exhaustion correlated more strongly with cynicism and inadequacy than what it did with depressive symptoms. In line with these findings, most studies which have factor analysed burnout and depression have showed that burnout dimensions are psychometrically distinguished from depression (e.g., Bakker et al., 2000; Shaufeli, Bakker, Hoogduin, Schaap, & Kladler, 2001; Toker & Biron, 2012), although it has been also argued that the results may be more related to the time frames and response alternatives than to the content (burnout vs depression; Bianchi 2015). Furthermore, majority of studies seem to show that burnout predicts depression, and not the other way around (Armon, Melamed, Toker, Berliner, & Shapira, 2014; Salmela-Aro et al., 2009; Shin, Noh, Jang, Park, & Lee, 2013). However, it needs to be noted that these studies have not tested bi-directional links (i.e., reciprocal effects) between depression and burnout and may, therefore, be biased towards one direction or another (Bianchi et al., 2015).

Interestingly, the results of the present research concerning the co-development of school and sport burnout symptoms showed that school-related exhaustion spilled over into the sport domain but not vice versa (Study 4). If burnout was merely depression, it would have been expected that the spill-over effect would take place across both domains and burnout would become overall pervasive. However, the findings of the present dissertation suggest that sport and school burnout among student-athletes are separate, but related, entities, at least during the first year of upper secondary school. These results are in line with the findings of Salmela-Aro et al. (2009) and suggest that the school domain may be particularly crucial in the diffusion of burnout. This was also evident in the athletes' own stories (Study 3); all athletes in the

burnout-risk group discussed their difficulties in school and school-related stress (and spoke less about sport-related stress), although they had symptoms of both sport and school burnout based on their quantitative profile. There may be several explanations for this finding. According to Smith's (1986) cognitive-affective model, burnout occurs when situational demands chronically exceed the available resources and leads to a generalization of burnout symptoms (i.e., all activities that used to be enjoyable lose meaning). Among student-athletes, school is often the "mandatory" domain and sport the "passionate" domain (Christensen & Sorensen, 2009; Ryba, Ronkainen & Selänne, 2015; Ryba et al., 2017). For example, it has been shown that student-athletes often have more defined goals and ideas for their futures in sport than in other life areas, including school (Ryba et al., 2017). Therefore, student-athletes may feel more competent and intrinsically motivated in sport (i.e., they have personal resources) than school, but they are pressured by internal (thoughts) or external (parents) agents to perform well in school to ensure a transition into working life (i.e., they have greater personal and situational demands in school). This was evident in the stories of adolescents who were at risk for burnout (Study 3), as most reported feelings of inadequacy and an overload of work in school but not in sport. Therefore, burnout symptoms may begin in the school context but generalize to the sport context over time, as an athlete becomes *generally* exhausted (i.e., has no energy for any activity). Another explanation could be student-athletes' time constraints. In their qualitative descriptions, nearly all who were characterized by burnout risk reported having too much schoolwork. Student-athletes may spend all their time outside of sport doing their schoolwork and so do not have time to recover from sport (i.e., sleep properly), which also leads to exhaustion in sport. These two explanations are not mutually exclusive but more likely complement each other.

The results of Study 4 showed that cynicism and inadequacy did not spill over from school to sport or vice versa. One explanation could be that exhaustion has been shown to be the central and initial part of burnout (Leiter & Maslach, 1988; for a review, see Taris, Le Blanc, Schaufeli, & Schreurs, 2005), although some studies have shown that exhaustion and cynicism in combination might precede feelings of inadequacy in the school context (Parker & Salmela-Aro, 2011). Exhaustion may be the primary symptom of stress, after which individuals try to cope with the exhaustion by detaching from duties (i.e., develop a cynical attitude toward the domain) and finally begin to view their accomplishments negatively (i.e., feeling inadequate in the domain; Leiter & Maslach, 1988). It is possible among student-athletes, over time, cynicism and feelings of inadequacy also spill over to another domain. It is also possible that only student-athletes' exhaustion is transferred from school to sport. It has been argued that exhaustion should be investigated separately from cynicism and inadequacy, since these do not really measure the same construct (i.e., exhaustion is a physiological and emotional state, whereas cynicism and feelings of inadequacy are attitudes; see Gustafsson et al., 2017). It has been recently shown that burnout dimensions may not be related over a longer

period and that cynicism and feelings of inadequacy scores fluctuate persistently and frequently (Lundkvist et al., 2017). Some researchers have therefore argued that exhaustion may be the only dimension that captures sport burnout (for a review, see Gustafsson et al., 2017). Student-athletes might have very different attitudes toward sport and school but still feel generally exhausted as a result of school-related stress. It is further possible that, as suggested by Biachi and others (2015), exhaustion reflects more general depression: student-athletes may become depressed due to chronic stress in school, which then generalizes to all areas of life (including, but not exclusively, sport). This might explain why only exhaustion spills over across domain, but not the other two dimensions of burnout. Nevertheless, the development of sport and school subscales must be investigated over a longer time frame to address these conceptual disagreements and contribute to a greater understanding of the phenomenon.

4.3 Predictors of sport and school burnout

The third aim of the present research was to investigate which factors predict sport and school burnout among student-athletes. In three studies, preselected quantitative predictors were investigated; in one study, it was investigated qualitatively which predictors would emerge from the stories of athletes with a certain burnout profile. According to Smith's (1986) model, there are certain resources that may protect from and certain demands that may contribute to sport burnout. In the present research, the aim was to extend the model into a dual career context and investigate which resources and demands were related to the development of sport and school burnout among student-athletes.

4.3.1 Individual- and environment-related resources

Smith's model differentiates between individual- (e.g., self-efficacy) and environment-related (e.g., social support) resources, although it is noted that the two are complexly intertwined. In the present research, it was expected that among student-athletes, the resources may be different than for only athletes or only students. Student-athletes could, for example, have social support from various domains. The results of the present research showed that student-athletes' resources against sport and school burnout consist of individual-related factors, which are high success expectations in the same domain (Study 2), adaptability (the ability to manage setbacks, manage time, and have a sense of humor; Study 3), intrinsic motivation in sport (Study 3), and domain-related mastery goals (Study 4). In addition, when only the sport context was investigated (Study 1), burnout was negatively connected to task values and self-esteem. Past studies have similarly shown that being intrinsically motivated, having high self-esteem, and mastery-related goals (i.e., focusing on development and personal mastery) are likely to protect from burnout in sport

(for a review, see Goodger, Gorely, Lavallee, & Harwood, 2007) and school (Wahlburg, 2014). In addition, student-athletes' stories revealed that those who were not at risk for burnout had a sense of humor and were able to laugh about their mistakes. Nonetheless, no directionality can be drawn from these findings: it may be that instead of a sense of humor protecting against burnout, lack of burnout contributes to accepting mistakes with a sense of humor. Nevertheless, it has been shown in occupational settings that humor is negatively connected to burnout (Ho, 2016; 2017). In the future, it would be interesting to investigate the role of humor in student-athletes' burnout.

Environment-related resources were social support (support from family and friends; Study 3) and parent-rated high success expectations (Study 2). A strong body of evidence suggests that social support protects from burnout in both sport (for a review, see Eklund & DeFreeze, 2015; Goodger et al., 2007) and school (Wahlburg, 2014). For student-athletes, support from parents may be crucial. Parental success expectations are likely to be linked to parental support, as athletes may feel that the parent believes in them and, perhaps through that belief, is helping them to reach their goals. The qualitative findings (Study 3) showed that athletes who were not at risk for burnout spent a lot of time with their parents and also felt that they could talk to their parents (and, in some cases, siblings and grandparents), which helped them to overcome difficulties.

4.3.2 Individual- and environment-related demands

According to Smith's (1986) theory, individual- (i.e., perfectionism) and environment-related (i.e., high training load) demands are related to the development of sport burnout. The present research showed that high individual success expectations in one domain were related to burnout in the *other* domain (Study 2). This highlights the importance of investigating sport and school dimensions simultaneously among student-athletes, as addressing only one domain may lead to false conclusions. For example, the student-athlete might perform well in sport and have few symptoms of sport burnout but be severely burned out in school. Previous research has shown that student-athletes are often passionate about sport and find school to be compulsory (Christensen & Sorensen, 2009; Ryba et al., 2017). However, student-athletes are likely to be high achievers in both domains and may find it difficult to accept lower standards for themselves (Ryba et al., 2016; 2017). Therefore, it is not surprising that those who have high expectations in sport are burned out in school. It is more surprising that the effect also works in reverse (those with high expectations in school may be burned out in sport). This indicates that there are student-athletes who expect to perform well in school and may find sport to be the compulsory domain. This may be at least partly explained by cultural differences: in some other countries, such as the US, student-athletes may study on a sport-related scholarship and so be paid for sport, but in Finland, education is free and there are only a few professional sport opportunities available (i.e., most athletes will never become professional). Therefore, it may be more sensible for Finnish student-athletes to focus more on

school instead of sport. The present research also showed that student-athletes who were in the burnout-risk group described school-related stress and inadequate recovery (Study 2). Previous studies have similarly shown that inadequate recovery is a significant predictor of sport burnout (Gustafsson et al., 2008). However, those characterized by the burnout profile described only school-related stress (Study 3). This confirms the results of the cross-lagged SEM (Study 4) that school-related exhaustion affected the sport context.

Environment-related demands consisted of disempowering coaching, little social life outside of sport and school (Study 3), and high parental expectations in the *other* domain (Study 2). Previous literature has similarly shown that disempowering coaching is related to sport burnout (Appleton & Duda, 2016). Coaches play a significant role in adolescent athletes' well-being and motivation, so it is essential to educate coaches about the impact of different coaching styles. It was also expected that some student-athletes would suffer from not having time for a social life, although few studies have investigated this empirically. The daily schedule of student-athletes is usually very tightly structured, and the time for socializing is very limited. These restrictions are likely to result in less social support and less time for recovery, which is associated with sport burnout (Gustafsson et al., 2008). It would be important in the future to use this preliminary information from the athletes' stories and investigate the emerging predictors quantitatively and over time.

Burnout within one domain was associated with high parental expectations in the *other* domain (Study 2). This finding is unique but not unexpected. Parents might encourage children in one domain (e.g., school) and have high expectations, such that the children might find this domain interesting and relevant but develop burnout symptoms in the domain toward which the parents are less encouraging. Of course, no causal conclusions can be drawn from these findings; it is equally possible that parents have high expectations in the domain wherein the child is originally more motivated. This again highlights the importance of investigating the directionality of these relationships over time.

4.4 Practical implications

The results of the present research are of importance for sport policy makers and stakeholders. First, a significant number of student-athletes already show both sport and school burnout symptoms at the beginning of upper secondary school, and these symptoms increase and become more generalized over time. This can have both financial and social costs, as burnout has been shown to predict later dropout in sport (Isoard-Gautheur, Guillet-Descas, & Gustafsson, 2016) and school (Bask & Salmela-Aro, 2013), mental health problems (Francisco, Arce, Vilchez, & Vales, 2016; Salmela-Aro, Savolainen, & Holopainen, 2008), and risk for later social exclusion (Upadyaya & Salmela-Aro, 2013). Consequently, the results are also meaningful on a public health level. As a

practical implication, upper secondary sport schools should acknowledge the phenomenon and organize annual screenings for sport and school burnout symptoms, such as by using the SpBI-DC (Sorkkila et al., 2017) and SBI (Salmela-Aro et al., 2009). Those students with a burnout risk should be given psychosocial support and guidance by health career specialists. The present research has shown that coaches and parents also play a role in the development of sport and school burnout symptoms, so it would be important to include coaches and parents in the support program. Furthermore, an option for sport psychological counseling should be available to all student-athletes.

Second, school exhaustion seems to predict later sport exhaustion (school might be the origin of exhaustion, which then affects sport). There are at least two possible consequences in misidentifying the origin of burnout. First, if athletes show no sport burnout symptoms, coaches and parents may continue to impose high demands in the sport domain even if athletes suffer from burnout symptoms in school and would need more time for recovery. Second, when sport burnout symptoms are detected, it may be ineffective to treat them only in the sport domain, if the burnout originates in school. Therefore, treatment may be ineffective, and in long run burnout could develop into depression, which has many serious consequences for adolescents (for a review, see Parker & Roy). It has been shown, for example, that coaches are primarily interested in athletes' well-being in sport, but not in school (Ronkainen, Ryba, Littlewood, & Selänne, in press). It would be essential to educate coaches, especially youth coaches, about student-athletes' school demands and related stress.

Third, in line with Smith's model, our results showed that there are different demands and resources for student-athletes, which play a role in the development of sport and school burnout. Based on these findings, upper secondary sport schools could develop a plan for early burnout prevention, such as offering a course to students, coaches, and parents in the beginning of the year about the studies demonstrating the risk and resilience factors related to dual career construction. The course could also provide information about the relevant resources and protective factors (e.g., how to give social support; how to develop personal resiliency) and about the demands and risks (e.g., the risk of focusing only on one domain or not having time for recovery or social life outside of sport and school). Such early education may be effective in not only increasing student-athletes' well-being and self-efficacy but also creating more cooperation and united goals between school, sport, and family life.

Finally, the results should be acknowledged on a societal and structural level for upper secondary school education. Although the EU commission noted that student-athletes should be given specific attention to avoid school dropout (EU Guidelines, 2012), there may be a lack of tools to encourage student-athletes to stay motivated and to promote their well-being in school. For example, student-athletes could be offered mindfulness-based online courses, which would help in balancing stress and finding resilience. Mindfulness has been shown to be a promising tool in preventing sport

burnout (Moen, Abrahamsen, & Furrer, 2015; Moen & Wells, 2016), and online courses have many benefits, such as cost-effectiveness and flexibility (Ly, Asplund, & Andersson, 2014). Nevertheless, to the author's best of knowledge, online interventions have not been tested in the sport setting, nor have burnout-related interventions been yet conducted at all in the school setting. Finnish upper secondary school in its current form may also be too demanding for student-athletes who need to devote significant time and effort to their sport. Instead of asking how student-athletes can do everything, it should be asked whether student-athletes *need* to do everything. It might be beneficial, for example, to generate specific upper secondary school paths for athletes, with fewer study points (i.e., the amount of work involved in a course) required to graduate, allowing them to focus only on topics they find relevant to their future career interests. Certain obligatory courses could be replaced with courses that teach time and stress management skills, which might have long-lasting effects on student-athletes' well-being and efficacy in both school and later professional life.

4.5 Limitations and future suggestions

Although the present research offered novel and meaningful information about the development of sport and school burnout among student-athletes, there were certain limitations. First, the development of burnout was assessed only by two measuring points and during a six-month period, creating methodological limitations. For example, it was not possible to investigate how changes in burnout scores might predict a later change in scores throughout upper secondary school (i.e., instead of initial levels predicting change). It is essential that the development of sport and school burnout would be investigated over a longer time frame and with more measurement points.

Second, no pre-existing cutoff scores were used for sport and school burnout. Without cutoff scores for SBI or SpBI-DC, it is hard to evaluate the real-life implications of the results. Furthermore, without cutoff scores and consensual criteria of burnout, it is difficult to trustfully distinguish burnout from other conditions, such as depression (see Bianche et al., 2015). However, in Study 2, standard deviations from the sample mean were used to indicate burnout risk level. Since student-athletes' burnout has not been assessed before in Finland, these results can give a preliminary basis for cutoff scores among student-athletes in upper secondary schools. In the future, it would be important to investigate how those with higher burnout scores differ from those with lower. For example, in addition to self-report measures, observational and physiological measures could be applied to investigate how burnout scores predict performance. In sport settings, it has been shown that athletes with higher burnout scores may perform worse on the Stroop Color-Word Test than those with lower scores (Ryu, Kim, Choi, Kim, & Radlo, 2015). It is possible that sport burnout predicts cognitive deficits, although the cited study has been

criticized for the absence of psychometrically sound burnout measures (Gustafsson et al., 2016). However, it has been also shown that athletes who showed stress-related exhaustion performed significantly worse on tasks on attention, response control, and visuo-spatial memory ability than their peers (Sandström et al., 2011) indicating that certain learning and memory tasks may help differentiating those who are burned out from those who are not (see also Melamed, Shirom, Toker, Berliner, & Shapira, 2006).

In addition to measures of performance, future research should investigate sport and school burnout by using physiological measures. For example, as a stress-related phenomenon, burnout may be distinguishable by blood cortisol levels (cortisol being a hormone released in response to stress). Indeed, in occupational settings, burnout has been shown to be associated with *hypo*cortisolism, indicating that those who are burned out may be unable to produce sufficient amounts of cortisol (Toker, Melamed, Berliner, Zeltser, & Shapira, 2012). Hereby, burnout may be also distinguishable from depression, as it has been found that at least some subtypes of depression are associated, oppositely to burnout, with *hyper*cortisolism (i.e., high levels of cortisol; Hellhammer & Hellhammer, 2008; Lamers et al., 2013). Sport and school burnout could be also examined by using physiological measures of student-athletes' sleep quality and health. For example, work burnout has been associated with different kinds of sleep disturbances (e.g., reduced amount of deep sleep; van Diest & Appels, 2003), cardio-vascular diseases (Melamed, Shirom, Toker, Berliner, & Shapira, 2006), type 2 diabetes (Melamed, Shirom, Toker, & Shapira, 2006), and reproductive functions, more specifically, a lowered quality of male semen (Sheiner, Sheiner, Carel, Potashnic, & Shoham-Vardi, 2002; see also Melamed et al., 2006). Moreover, severity of work burnout has been predicted from empathy-related brain activity (Tei et al., 2014). However, only little physiological research on burnout has been conducted in the sport or school settings, and, consequently, it is strongly recommended that future research shift from self-reports to more objective measurements (Eklund & DeFreeze, 2015). For starters, it would be important to know whether similar kinds of results found in work context also exist in sport and school settings. Furthermore, in order to help conceptualizing sport and school burnout more trustfully, clinical observations and open descriptions of those who are burned out are needed (see Bianchi et al., 2015).

Third, the research was conducted in only one cultural setting. Although the schooling system for Finnish student-athletes may be relatively representative of the Nordic countries, there are differences compared to the schooling systems of the US or Asian countries. For example, in Finland, there are no athletic scholarships and only few athletes will ever turn professional, which may result in student-athletes focusing more on school than they do in countries with additional sport career options. Consequently, these results need to be investigated in other cultural contexts. It would also be interesting to conduct cross-cultural comparisons, such as the development of sport and school burnout in Nordic countries versus the US, to investigate different risk

and resilience factors in different schooling systems. This might help develop the educational systems of student-athletes worldwide toward a more effective and well-being-focused direction.

It is important to create intervention studies to practically apply the findings. This could be achieved, for example, in upper secondary sport schools by screening those at risk for burnout in the beginning of the school year, such as by using the SBI and the SpBI-DC. Next, a mindfulness-based online course could be implemented at school time for the next six months for the risk group and control group (i.e., those with no risk). Finally, the change in burnout scores in the end of the intervention could be assessed. A separate course could also be designed for parents. Coaches could be could be offered courses that would consist of training in more empowering coaching styles and teaching them to be more engaged in both the sport and school domains of the athletes. Such investments may prevent student-athletes' sport and school dropout and develop the sport-education system to be more holistic and sustainable.

Finally, although the study obtained an approval from the ethical board of the relevant University, certain ethical issues need to be discussed. First, the students filled in the questionnaires during class time, which may have made it difficult for some individuals to withdraw from the study due to, for example, perceived social pressure from the peers. In the future, this could be avoided by having adolescents fill in questionnaires on a class break or after school, although this may come at the cost of having a lower response rate. Furthermore, filling out questions of burnout may have been stressful for some adolescents, and, due to anonymity, it was not possible to reach or offer help for those adolescents who were at risk for burnout. However, data gathering was conducted in schools where school nurse or counsellor was available for students' health concerns. It is also possible that those athletes who were interviewed experienced stress during, and after, discussing personal and sensitive issues. Nevertheless, the interviewed athletes were monitored by an experienced sports medical doctor who conducted the interviews, and they were offered help and support also after the data gathering. Furthermore, for some athletes the interviews may have been beneficial, or even therapeutic, as they offered the athletes a place to be heard. In support of this notion, none of the interviewed athletes dropped out from the longitude, and all were willing to be interviewed again in the upcoming year.

4.6 Concluding remarks

This research investigated the development of sport and school burnout symptoms among adolescent student-athletes across the first year of upper secondary school by using different methodological approaches. Furthermore, different environment- and individual-related predictors were examined. The results showed that sport and school burnout symptoms increased and became more generalized over time. School exhaustion spilled over into the sport

context, which should be of interest to sport policy makers and governing bodies of upper secondary sport schools. Specific attention should be given to the school-related stress that student-athletes experience. In addition to individual-related factors, such as high expectations and mastery-related goals, environment-related factors, such as coaches and parents, seem to play a role in the development of burnout symptoms. High self- or parental expectations in one domain may result in burnout symptoms in the other, so it may be beneficial to find tools to balance student-athletes' aspirations between the two domains. It may also be helpful to educate coaches to support athletes in school. Interventions for preventing burnout among student-athletes should be developed to avoid school and sport dropout and support student-athletes' well-being in school and later life.

YHTEENVETO (SUMMARY)

Urheilu- ja koulu-uupumuksen kehitys suomalaisilla urheilulukiolaisilla ensimmäisen kouluvuoden aikana: tarkastelu eri tutkimusmenetelmiä hyödyntäen

Tämän tutkimuksen tavoitteena oli tarkastella urheilu- ja koulu-uupumuksen kehitystä urheilulukiolaisten keskuudessa ensimmäisen kouluvuoden aikana. Lisäksi tutkimuksessa tarkasteltiin mahdollisia ympäristöön ja yksilöön liittyviä uupumuksen selittäjiä. Urheilu- ja koulu-uupumus on määritelty koostuvan kolmesta osa-alueesta: 1) uupumusasteisesta väsymyksestä; 2) kouluun tai urheiluun liittyvästä kyynistymisestä; sekä 3) riittämättömyyden tunteesta urheilijana tai opiskelijana (Salmela-Aro & Näätänen, 2005; Raedeke & Smith, 2001). Tutkimuksessa hyödynnettiin sekä henkilökeskeistä tutkimusotetta, jossa tarkasteltiin erilaisia koulu- ja urheilu-uupumusoireista koostuvia profiileja, että muuttujakeskeistä lähestymistapaa, jossa tarkasteltiin koulu- ja urheilu-uupumuksen rinnakkaiskehitystä kouluvuoden aikana. Lisäksi tutkimuksessa hyödynnettiin monimenetelmätutkimusta (engl. *mixed methods research*), jossa tarkasteltiin urheilijoiden laadullisia kuvauksia hyvinvointiinsa ja jaksamiseensa liittyen eri uupumusprofiilien sisällä.

Tutkimus koostui neljästä osatutkimuksesta. Kaikissa osatutkimuksissa käytettiin samaa kuudesta suomalaisesta urheilulukiosta kerättyä urheilulukiolaisten aineistoa. Tutkittavat osallistuivat tutkimukseen kahdesti täyttämällä kyselylomakkeet lukion alussa (N=391) sekä ensimmäisen lukiovuoden lopussa (N=373). Ensimmäisen osa-tutkimuksen tarkoitus oli validoida kaikissa tutkimuksissa käytettävä urheilu-uupumus mittari, nimeltään *Sport Burnout Inventory - Dual Career Form (SpBI-DC).* Mittarin rakennetta, reliabiliteettia ja validiteettia tarkasteltiin rakenneyhtälömallinnuksen keinoin. Tulokset osoittivat, että kolmen faktorin malli, jossa jokaista urheilu-uupumuksen dimensiota (uupumusasteista väsymystä, kyynistymistä ja riittämättömyyden tunnetta urheilijana) kuvattiin omalla faktorillaan, sopi aineistoon paremmin ja osoitti parempaa rakenteellista validiteettia sekä sisäistä reliabiliteettiä kuin yhden faktorin malli, jossa mittarin ala-dimensioita ei huomioitu. Mittari osoitti yhtenevää validiteettia uupumusoireiden korreloidessa masennusoireiden kanssa, sekä eriävää validiteettia uupumusoireiden korreloidessa negatiivisesti urheiluun liittyvien arvojen ja itsetunnon kanssa. Tulokset osoittavat, että SpBI-DC on validi ja reliaabeli mittari urheilu-uupumusoireiden tutkimiseen urheilulukiolaisten keskuudessa.

Toisessa osatutkimuksessa tarkasteltiin erilaisten koulu- ja urheilu-uupumusprofiilien ilmenemistä lukion alussa nuorten koulu- ja urheilu-uupumusoireiden perusteella. Lisäksi tutkittiin urheilijanuorten ja heidän vanhempiensa kouluun ja urheiluun liittyvien odotusten suhdetta uupumusprofiileihin. Tilastollisina menetelminä käytettiin rakenneyhtälömallinnusta sekä latenttia profiilianalyysiä. Latentin profiilianalyysin avulla havaittiin neljä erilaista uupumusprofiilia. Suurin profiili oli *hyvinvoivat* (60 % nuorista), jossa nuoril-

la oli vähän tai ei lainkaan uupumusoireita. Seuraavaksi suurin profiili oli *lievän urheilu-uupumuksen profiili* (28 % nuorista), jossa nuorilla oli lieviä urheiluuupumusoireita, mutta ei koulu-uupumusoireita. Kolmas profiili nimettiin *koulu-uupumuksen profiiliksi* (9.6 % nuorista), jossa nuorilla oli koulu-uupumusoireita, mutta ei urheilu-uupumusoireita. Pienin profiili oli *vakavan urheiluuupumuksen profiili* (2.7 % nuorista), jossa nuorilla oli vakaviksi määriteltyjä urheilu-uupumusoireita, mutta ei koulu-uupumusoireita. Sekä urheilijan että vanhempien korkeat odotukset yhdellä osa-alueella (esim. koulussa) olivat negatiivisesti yhteydessä uupumukseen samalla osa-alueella, mutta positiivisesti yhteydessä uupumukseen toisella osa-alueella (esim. urheilussa). Tulokset osoittavat, miten tärkeää on tutkia koulu- ja urheilu-uupumusta samanaikaisesti urheilijanuorten keskuudessa todenmukaisen kuvan saamiseksi urheilijoiden hyvinvoinnista.

Kolmas osa-tutkimus oli monimenetelmätutkimus, jossa tarkasteltiin uupumusprofiilien tasoa ja kehitystä ensimmäisen kouluvuoden aikana hyödyntäen edelleen henkilökeskeistä tutkimusotetta. Toisesta osatutkimuksesta poiketen kolmannessa osatutkimuksessa tarkasteltiin uupumisprofiileja käyttäen tietoa molemmilta mittauskerroilta, mahdollistaen uupumuksen muutoksen tarkastelun. Lisäksi käytettiin laadullisia tutkimusmenetelmiä, joiden avulla oli mahdollista tarkastella eri urheiluprofiileihin kuuluvien urheilijoiden kertomusten pohjalta niitä hyvinvointiin liittyviä tekijöitä, jotka ennakoivat tiettyyn uupumusprofiiliin kuulumista. Määrällisinä menetelminä käytettiin kehittyvää mixture mallinnusta (engl. *growth mixture modeling*) ja laadullisina menetelminä teemallista analyysiä (engl. *thematic analysis*). Tuloksissa havaittiin neljä uupumusprofiilia. Suurin profiili oli *riskittömät* (42.1 % nuorista), jossa nuorilla oli keskimääräistä vähemmän koulu- ja urheilu-uupumusoireita, ja ne pysyivät tasaisena lukuvuoden aikana. Seuraavaksi suurin profiili oli nimeltään *uupumusriskin profiili* (35.2 % nuorista), jossa nuorilla oli keskimääräistä enemmän koulu- ja urheilu-uupumusoireita lukuvuoden alussa. Kyseisessä profiilissa koulu-uupumusoireet säilyivät korkeina lukuvuoden ajan, mutta urheiluuupumusoireissa tapahtui laskua. Kolmanneksi suurin profiili oli *kasvavan uupumuksen profiili* (12.8 % nuorista), jossa nuorilla oli alkutasossa vain vähän uupumusoireita, mutta sekä koulu- että urheilu-uupumusoireet kasvoivat merkittävästi kouluvuoden aikana. Pienin profiili oli *hyvinvoivat* (12.7 % nuorista), jossa nuorilla oli hyvin vähän tai ei lainkaan koulu- ja urheilu-uupumusoireita lukuvuoden alussa, eikä muutosta tapahtunut lukuvuoden aikana. Monimenetelmätutkimusta hyödyntäen 17 huippu-urheilijan uupumusprofiilit tunnistettiin ja heidän haastattelunsa analysointiin temaattisen analyysin avulla. Huippu-urheiljat kuuluivat sekä *riskittömiin* (n = 7) että *uupumusriskin profiiliin* (n = 9). Yksi urheilija kuului *hyvinvoiviin*, mutta hänen haastattelunsa jätettiin pois analyysistä pienen ryhmäkoon vuoksi. Riskittömän profiilin urheilijat raportoivat hyvinvointiin liittyviä tekijöitä, kuten sosiaalista tukea, adaptiivisuutta, sekä sisäistä motivaatiota urheilua kohtaan, kuin riskiprofiilin urheilijat. Uupumusriskin profiilin urheilijat raportoivat puolestaan kouluun liittyvää stressiä, lamaannuttavaa (engl. *disempowering*) valmennustyyliä valmentajaltaan, riittämä-

töntä toipumista urheilusta ja koulusta, sekä vähäistä sosiaalista elämää koulun ja urheilun ulkopuolella. Määrälliset ja laadulliset tutkimustulokset tukivat toisiaan ja osoittivat, että uupumusriskissä olevat urheilulukiolaiset kokevat runsaasti ympäristöstä tulevia vaatimuksia ja vain vähän voimavaroja. Erityisesti kouluun liittyvään stressiin tulisi kiinnittää huomiota uupumuksen ennalta ehkäisyssä.

Viimeinen osatutkimus tarkasteli koulu- ja urheilu-uupumuksen osa-alueiden, eli uupumusasteisen väsymyksen, kyynistymisen, sekä riittämättömyyden tunteiden rinnakkaiskehitystä ensimmäisen lukuvuoden aikana hyödyntäen muuttujakeskeistä lähestymistapaa. Lisäksi urheilijoiden tavoitteita (engl. *achievement goals*), eriteltynä oppimistavoitteisiin (tavoitteita taidon hallitsemisesta tai henkilökohtaisesta kehityksestä) sekä suoritustavoitteisiin (tavoitteita muiden voittamisesta), tarkasteltiin uupumuksen osa-alueiden selittäjinä. Menetelmänä käytettiin ristiviive (engl. *cross-lagged*)-rakenneyhtälömallinnusta. Tulokset osoittivat, että koulu- ja urheilu-uupumus pysyivät tasaisina lukuvuoden aikana. Uupumusasteinen väsymys koulussa levisi urheilun osa-alueelle. Oppimistavoitteet yhdellä alueella (esim. urheilussa) suojasivat kyynistymiseltä ja riittämättömyyden tunteilta samalla osa-alueella (urheilussa). Suoritustavoitteet koulussa olivat puolestaan yhteydessä kouluun liittyvään kyynistymiseen. Kokonaisuudessaan tulokset osoittavat, että koulusuoriutumiseen liittyvä väsymys urheilulukiolaisten keskuudessa voi heijastua myös jaksamiseen urheilussa. Muiden voittamiseen liittyvien tavoitteiden sijaan yksilön henkilökohtaiseen kehitykseen liittyvät tavoitteet voivat suojata urheilu- ja koulu-uupumusoireilta.

Kokonaisuudessaan väitöskirjatutkimuksen osa-tutkimukset tukevat toisiaan ja kuvailevat kattavasti samanaikaisen koulu- ja urheilu-uupumuksen kehitystä urheilulukion ensimmäisen vuoden aikana. Tulokset osoittavat, että erityisesti koulussa koettu stressi saattaa johtaa väsymykseen myös urheilussa. Tämä tieto on tärkeä urheilulukiolaisten aikataulun ja kokonaisvaltaisen jaksamisen suunnittelussa. Urheilulukiossa voisi siirtyä kilpailuun kannustavasta ilmapiiristä enemmän yksilön kehitykseen pyrkivään ilmapiiriin sekä panostaa opiskelijoiden saamaan sosiaaliseen tukeen ja ohjaukseen. Tutkimuksen rajoitteina voidaan nähdä ilmiön lyhyt tarkasteluväli ja vain kaksi mittauskertaa. Lisäksi rajoitteena oli mittareista puuttuvat kliiniset raja-arvot, jonka vuoksi on vaikea tietää, miten ne, joilla on enemmän uupumusoireita eroavat todellisuudessa niistä, joilla oireita on vähemmän. Tulevien tutkimusten olisikin hyvä tutkia koulu- ja urheilu-uupumusta lukion läpi uupumusoireita todellisiin suorituksiin verraten. Kyselytutkimusten lisäksi uupumusta voitaisiin tutkia fysiologisilla ja havaintoihin perustuvilla menetelmillä. Tutkimuksen tuloksia voidaan käyttää urheilulukiolaisten uupumuksen ennalta ehkäisyyn sekä hyvinvointipalvelujen kehittämiseen.

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ORIGINAL PAPERS

I

SPORT BURNOUT INVENTORY – DUAL CAREER FORM FOR STUDENT-ATHLETES: ASSESSING VALIDITY AND RELIABILITY IN A FINNISH SAMPLE OF ADOLESCENT ATHLETES

by

Matilda Sorkkila, Tatiana V. Ryba, Kaisa Aunola, Harri Selänne, & Katariina Salmela-Aro, 2017

Journal of Sport and Health Science, in press.

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Journal of Sport and Health Science xx (2017) 1–9

www.jshs.org.cn

Original article

Sport burnout inventory–Dual career form for student-athletes: Assessing validity and reliability in a Finnish sample of adolescent athletes

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Received 16 March 2017; revised 1 June 2017; accepted 11 July 2017
Available online

Abstract

Background: The pressure of pursuing an athletic career simultaneously with education may set adolescent student-athletes at risk for sport and school burnout. Although the 2 life domains of student-athletes are strongly intertwined, so far, there has not been an instrument for investigating sport burnout parallel to school burnout. The aim of the present study was to introduce a sport burnout measure for adolescents in a dual career context and investigate its validity and reliability by using confirmatory factor analysis.

Methods: The participants were 391 student-athletes (51% females) who filled in a questionnaire of sport burnout and background variables in the beginning of upper secondary school.

Results: A 3-factor model or a second-order-factor model described the data better and gave better reliability indices than a 1-factor model. The 3 dimensions of sport burnout were shown to be separate, but closely related constructs. Evidence for convergent and discriminant validity was obtained by correlating the 3 sport burnout dimensions with depressive symptoms, self-esteem, and sport task values.

Conclusion: The results suggest that Sport Burnout Inventory–Dual Career Form (SpBI-DC) is a valid and reliable instrument for investigating sport burnout among adolescent student-athletes.

Keywords: Confirmatory factor analysis; Depressive symptoms; Dual career; Self-esteem; Sport burnout inventory; Sport task values

1. Introduction

Massive numbers of adolescents participate in organized sport during their education years worldwide. For example, in the USA, more than 400,000 students participate in intercollegiate athletic programs yearly,[1] whereas in Canada 84% of young adolescents have reported participating in sports.[2] According to Wylleman and Lavallee's lifespan perspective on athletes' development,[3] transition into elite sport often coincides with educational and professional development of athletes, which makes it stressful for them to reconcile training and competition demands with the requirements and restrictions in educational systems. The challenge of combining elite sport and education has been acknowledged in the international sport psychology literature[4] and it has also received government attention. For example, the European Commission outlined its suggestions for the promotion of elite sport development in a socially responsible manner.[5] The pressure of striving in 2 intertwined domains may set student-athletes at risk for sport and school burnout. Indeed, in a recent study conducted in Finland, student-athletes on a dual career path were found to report both sport or school burnout symptoms as soon as the beginning of upper secondary school.[6] In addition to cumulative mental health problems, burnout is associated with sport and school dropouts.[7,8]

Despite the severity of this issue, so far there has not been a scale to measure sport burnout in a dual career context. Although several tools have been developed to investigate sport burnout (e.g., Athlete Burnout Questionnaire (ABQ);[9] Eades Athlete Burnout Inventory (EABI);[10] The Sport Adaptation of Maslach Burnout Inventory (SAMBI)[11]) these instruments do not allow for parallel investigation of sport and school burnout in student-athletes. Among student-athletes the 2 life domains (i.e., sport and school) are strongly intertwined, one domain

Peer review under responsibility of Shanghai University of Sport.
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https://doi.org/10.1016/j.jshs.2017.10.006

Please cite this article in press as: Matilda Sorkkila, Tatiana V. Ryba, Kaisa Aunola, Harri Selänne, Katariina Salmela-Aro, Sport burnout inventory–Dual career form for student-athletes: Assessing validity and reliability in a Finnish sample of adolescent athletes, Journal of Sport and Health Science (2017), doi: 10.1016/j.jshs.2017.10.006

constantly affecting the other, and, consequently, there is a need to address burnout symptoms in these 2 domains simultaneously. From a methodological point of view, using scales including parallel items for the sport and school domains would make it possible to get comparable results of burnout symptoms on these 2 different life domains. The present study introduces a novel instrument called Sport Burnout Inventory–Dual Career Form (SpBI-DC), which is designed particularly for youth athletes on a dual career track. The study, furthermore, investigates the validity and reliability of the SpBI-DC in a Finnish sample of student-athletes.

1.1. Sport burnout within dual career context

A number of different tools have been employed to measure athlete burnout, with varying success.[12-14] Initially, well-established instruments from work context were adapted into sport context,[11] the most widely used being the Maslach Burnout Inventory (MBI).[15] The original MBI is comprised of 3 dimensions: emotional exhaustion (i.e., feelings of extreme fatigue), depersonalization (i.e., negative or indifferent attitude toward clients), and reduced personal accomplishment (i.e., negative evaluations of oneself). The adaptation of the scale to a sport context (see SAMBI[11]) has been problematic because of the "depersonalization" dimension, as the provider-recipient relationship (i.e., one being worker and one client) does not define the central aspects of sports. Furthermore, no published studies have investigated the psychometric properties of the SAMBI,[12] which makes it questionable to use the scale.[14]

Other attempts to measure sport burnout include, for example, the EABI[10] that was invented as part of an unpublished Master's thesis. Although the scale has been used in published studies, it has been criticized for not being theoretically grounded and difficult to interpret.[12] The most promising and used measure of athlete burnout thus far has been ABQ,[9,16] which is developed based on the MBI. The measure conceptualizes sport burnout as consisting of emotional or physical exhaustion, reduced sense of accomplishment, and sport devaluation. The ABQ has gained empirical support and is considered a theory-based instrument for measuring athlete burnout in a sport context. Although the ABQ has been widely used, it has been also criticized for not showing sufficient psychometric evidence.[17] For example, in the comparison of MBI and ABQ,[18] factor loadings on general factors (i.e., exhaustion, cynicisms, and inadequacy) were not reported, but claims of construct validity were based on correlations between the subscales.[17] Consequently, it has been noted, that there may not be an optimal measure yet for sport burnout, although researchers typically adopt the ABQ.[17] It has been pointed out that having 1 dominant instrument in the field may be dangerous, because the questionnaire and definition of burnout may become "2 sides of the same coin" (p. 193): the instrument measures what burnout is, and burnout is what the instrument measures.[19] Another challenge of ABQ is that no comparable scales for other life domains are evident and, thus, comparisons of the levels of burnout symptoms in different contexts are not possible when using this particular scale. In the case of student-athletes, the contexts of sport and school constantly interact, and therefore, sport and school burnout should be concurrently investigated. To make this possible, scale with parallel items in school and sport domains are needed.

In order to gain equal measurements for sport and school burnout we developed a new scale labelled SpBI-DC based on the widely used and validated scale of school burnout, that is, School Burnout Inventory (SBI).[20,21] School burnout has been defined as a multidimensional construct consisting of school-related exhaustion (i.e., chronic fatigue due to over-taxing in school), school-related cynicism (i.e., loss of interest in schoolwork accompanied with indifferent or distal attitude toward school), and feelings of inadequacy as a student (i.e., less successful achievement and reduced feelings of competence in school).[20,21] Similarly to school burnout, in the SpBI-DC sport burnout was defined as a multidimensional construct consisting of sport-related exhaustion (i.e., chronic fatigue due to over-taxing in sport), cynicism (i.e., loss of interest in sport accompanied with indifferent or distal attitude toward one's sport), and feelings of inadequacy as an athlete (i.e., less successful achievement and reduced feelings of competence in sport).

In our previous study, sport and school burnout were found to be related but separate constructs.[6] Although there are conceptual similarities between the 2 constructs (e.g., both sport and school burnout are stress-related conditions), they refer to context specific sources of stress (i.e., in school context the source of stress is school, whereas in sport context the source of stress is sport). A significant advantage of the SpBI-DC scale is that even though it shares the theoretical grounding of the ABQ,[9] the items of the scale match directly the items of the SBI,[20,21] and therefore, statistical procedures, such as multilevel modeling across contexts can be performed. Because the scale is also shorter than the ABQ,[9] it may be more convenient to administer to adolescents and easier to include into batteries of tests. The scale consists of 10 items measuring 3 dimensions of sport burnout, namely exhaustion, cynicism, and inadequacy.

1.2. Predictors of sport burnout

In the previous literature, many individual characteristics have been investigated as antecedents of sport burnout, such as high perceptions of stress and anxiety and avoidance-related goals.[22] Moreover, the role of motivational factors in development of sport burnout has been emphasized.[23] Subjective task values, which consist of interest, importance, and utility values one attaches to different activities, are important determinants of achievement-related choices and motivation.[24] Interest values refer to pleasure and enjoyment associated with the activity; importance values refer to the importance of operating in line with one's core-values and satisfying personal needs; and utility values refer to whether activity is perceived as useful in terms of achieving other goals. It has been shown that lack of motivation is associated with high levels of sport burnout symptoms, and high intrinsic motivation is negatively associated with sport burnout symptoms.[9,12] In addition to motivation, self-esteem has been negatively associated with sport burnout symptoms.[25] Self-esteem can be defined as "the overall evaluation of one's worth or value as a person."[26] In a sport context, it has been shown that performing well may become a vehicle

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for athletes to enhance and maintain self-esteem.[25] Deteriorated results and symptoms of sport burnout, namely exhaustion, inadequacy, and cynicism, may therefore decrease athletes' overall self-esteem.[27] Consequently, it was assumed that sport task values and self-esteem would be negatively related to sport burnout.

Another important factor which has been related to sport burnout is symptoms of depression.[12] Although the 2 concepts are associated, they still differ in important ways both empirically and theoretically.[12] Most importantly, at least the initial symptoms of burnout seem to be context specific[28] whereas symptoms of depression are pervasive and influence nearly all activities.[29] Studies have consistently shown that depressive symptoms are associated particularly with the exhaustion dimension of burnout,[30,31] and therefore, it has been argued that valid and reliable sport burnout measures must demonstrate convergence with depressive symptoms.[12] It has been shown that obtaining information of depressive symptoms from adolescents' mothers may be particularly useful in predicting future depression.[32] Consequently, we used mother-rated depressive symptoms as a predictor of sport burnout, and we expected depressive symptoms to be associated positively with symptoms of sport burnout.

1.3. Sport burnout and background variables

Various background variables, such as type of sport (i.e., individual *vs.* team) and gender, have previously been associated with sport burnout. For example, in elite athletes, sport burnout has been shown to be more common in individual sports than team sports.[33] It has been suggested that factors related to social support, such as cooperation and encouragement, may be emphasized more in team sports than in individual sports, explaining the difference in burnout levels between the 2 types of sport.[33] Moreover, females have been shown to be more at risk for sport burnout than males.[6,33] This may be explained by traditional gender beliefs and fewer opportunities available for female athletes to pursue professional athletic careers compared to men.[34] Due to these findings, background variables of type of sport and gender were controlled for in the present study.

1.4. The present study

The present study is part of the ongoing Adolescent Dual Careers study in Finland.[35] The overall purpose of the present study was to introduce a novel instrument for investigating sport burnout in dual career settings and to examine the reliability and validity of SpBI-DC in a sample of male and female upper secondary sport school students. The first aim was to investigate the construct validity of SpBI-DC. We tested the structure of SpBI-DC by comparing the goodness-of-fit of the 3-factors model of sport burnout to the 1-factor model. We expected that a 3-factor model consisting of exhaustion in sport, cynicisms toward sport, and perceptions of inadequacy as an athlete would describe the phenomenon of sport burnout better than a 1-factor model consisting overall sport burnout.[21] Second, we examined item reliability and scale reliability of SpBI-DC. Finally, we examined discriminant and convergent validity of SpBI-DC by investigating how the scale would correlate with self-rated sport-related task-values and self-esteem (discriminant validity), and parent-rated depressive symptoms (convergent validity), while controlling for gender and type of sport (individual *vs.* team). It was expected that higher sport-related task-values and self-esteem would be associated with lower sport burnout symptoms, and that higher depressive symptoms would be associated with higher sport burnout symptoms.

2. Methods

2.1. Participants

The participants were 391 female (51%) and male student-athletes from 6 different upper secondary sport schools in Finland and 260 mothers. The mean age of the athletes was 16 ± 0 years. Fifty percent of the athletes practiced individual sports (e.g., judo, track and field) and 50% team sports (e.g., football, ice hockey). The athletes practiced sport or engaged in activities related to their sport (e.g., traveling to training) on average for 25 ± 9 h/week. Athletes competed at various levels (i.e., regional, national, international), and had been competing, on average, for 7 ± 2 years.

2.2. Procedure

The study was approved by the Ethics Committee of the University of Jyväskylä. The data were collected at the beginning of the first year of upper secondary school during class time in the autumn of 2015. After the athletes were informed of the study objectives, they filled in an informed consent and a battery of questionnaires, which included SpBI-DC. All data were collected in Finnish. At the same time a set of questionnaires, which included a questionnaire of the child's depressive symptoms was sent to both parents. Because the fathers' response rate (<50%) was low, in the present study only mothers' (response rate 66%) answers were used.

2.3. Measurements

2.3.1. Sport burnout

Sport burnout was measured with SpBI-DC, which is a modified SBI.[20,21] The scale consisted of 10 items measuring 3 dimensions of sport burnout: (a) exhaustion from one's sport (4 items; e.g., I feel overwhelmed by my sport):, (b) cynicism toward the meaning of one's sport (3 items; e.g., Sport doesn't interest me anymore); and (c) feelings of inadequacy as an athlete (3 items; e.g., I often have feelings that I'm not doing well in my sport). All items were rated on a 5-point Likert-scale (1 = *strongly disagree;* 5 = *strongly agree).* The Cronbach α reliabilities for the 3 subscales were 0.74, 0.80, and 0.78, respectively. The Cronbach α reliability for the total scale was 0.85.

2.3.2. Sport task values

Sport task values were measured with a modified scale based on Eccles et al.[24] This scale consists of 13 items measuring 3 dimensions: (a) interest values (5 items; e.g., How much do you

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like playing your sport?) in which the items are rated on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*); (b) importance values (4 items; e.g., How important is it to you that you do well in your sport?) rated on a 5-point Likert scale from 1 (*not at all important*) to 5 (*very important*); and (c) utility values (4 items; e.g., How useful is practicing your sport for what you want to do after you graduate or go to work?) in which the items are rated on a 5-point Likert scale ranging from 1 (*not very useful*) to 5 (*very useful).* The Cronbach α reliabilities for the 3 subscales were 0.78, 0.81, and 0.80, respectively.

2.3.3. Depressive symptoms

Athletes' depressive symptoms were measured with items drawn from the internalizing symptom subscale of Strengths and Difficulties Questionnaire (SDQ),[36] in which student-athletes' mothers were asked to rate to what extent the statements correspond to their child. The scale consisted of 7 items (e.g., He/she is often sad) rated on a 5-point Likert-scale (1 = *strongly disagree;* 5 = *strongly agree).* The Cronbach α reliability for the scale was 0.71.

2.3.4. Self-esteem

Athletes' self-esteem was measured with 5 items (e.g., On the whole, I feel satisfied with myself) taken from Rosenberg's Self-Esteem scale.[37] The items were rated on a 5-point Likert scale (1 = *strongly disagree;* 5 = *strongly agree).* The Cronbach α reliability for the scale was 0.77.

2.4. Analysis strategy

The SpBI-DC items were investigated with confirmatory factor analysis by using the M*plus* package (7th edition).[38] A missing-data method was used, in which all available data were used to estimate the model without inputting data. The maximum-likelihood-robust estimation method was applied for estimating the parameters of the model. The goodness-of-fit was evaluated by using 4 indicators: (1) χ^2 test, (2) Bentler's (1990) comparative fit index (*CFI*), (3) the Tucker-Lewis Index (*TLI*), and (4) root mean square error of approximation (*RMSEA*). Based on the criteria of Hu and Bentler,[39] values above 0.95 for CFI and TLI and a value below 0.08 for RMSEA were considered indicating a good fit between the observed data and hypothesized model.

The analyses were performed in 4 steps. First, the structure of SpBI was determined by comparing 2 alternative theoretical models: (1) a 1-factor model (M1) in which 1 latent factor was expected to underlie all SpBI items, and (2) a 3-factor model (M2) in which 3 correlated latent factors (exhaustion, cynicism, and inadequacy) were expected to underlie the SpBI items. The 2 theoretical models were estimated independently, and Satorra-Bentler scaled χ^2 test for difference[35] was used to compare the goodness of fit of the models. Second, it was investigated whether second-order-factor model (M3) could describe the phenomenon of sport burnout. In this model the relationships between the 3 first-order factors (exhaustion, cynicism, and inadequacy) were assumed to be explained by a second-order factor consisting of overall sport burnout. In order to show sufficient reliability and validity, the second-order latent factor of overall sport burnout needs to have a relatively high correlation between the first-order factors.[21] It needs to be noted that the M2 and M3 models have the same number of estimated parameters and are therefore data-equivalent. The 3 theoretical models are shown in Fig. 1.

The third step was to investigate the validity and reliability of the items of SpBI-DC by using confirmatory factor analysis (CFA). First, item reliability was measured by examining

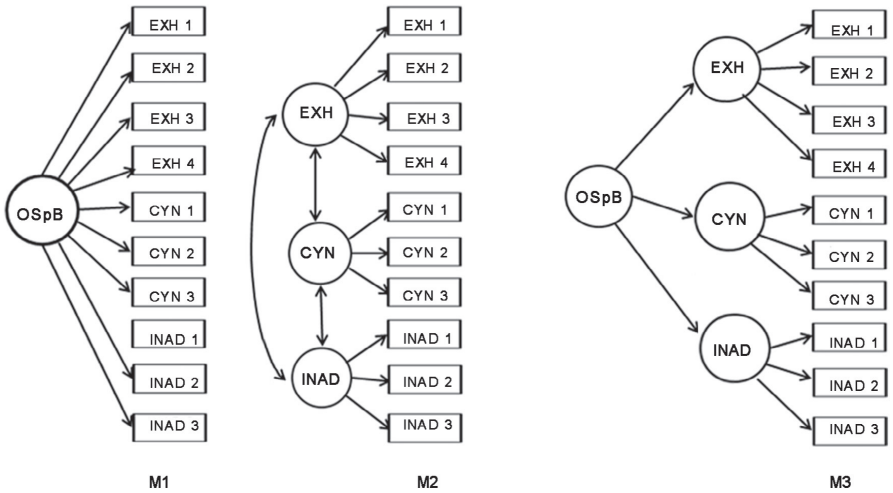

Fig. 1. The theoretical models of the SpBI-DC. CYN = cynicism; EXH = exhaustion; INAD = inadequacy; M1 = 1-factor model; M2 = correlated 3-factor model; M3 = second-order-factor model; OSpB = overall sport burnout; SpBI-DC = Sport Burnout Inventory–Dual Career Form.

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squared correlations between the item and the factor. Next, standardized factor loadings were used to measure structural validity of the items. Finally, internal consistency of SpBI-DC was investigated by estimating Cronbach's α reliabilities and factor score scale reliabilities (i.e., squared correlations between the latent factor and the factor score scale).

The fourth step was to investigate whether evidence of convergent and discriminant validity of SpBI-DC was shown by examining meaningful predictors of sport burnout. Consequently, depression, self-esteem, and motivation were added to the final M2 and M3 models, and paths from these predictors to the latent factors were estimated while accounting for gender and type of sport.

3. Results

3.1. Structure of the SpBI-DC

The descriptive statistics and correlations between the SpBI-DC items are shown in Table 1.

We started the CFA by testing M1, which included all 10 items that measured different aspects of sport burnout (exhaustion, cynicism, inadequacy) as indicators of overall sport burnout. The goodness-of-fit indices for M1 were: $\chi^2(35) = 261.65$, $p < 0.001$; CFI = 0.75; TLI = 0.68; RMSEA = 0.13. Next, 3 correlated latent factors, that is, exhaustion (4 items), cynicism (3 items), and inadequacy (3 items), were assumed to underlie the items. The goodness-of-fit indices for M2 were $\chi^2(32) = 80.22$, $p < 0.001$; CFI = 0.95; TLI = 0.93, RMSEA = 0.06. Because correlations between the factors in M2 were relatively high (exhaustion, cynicism: $r = 0.48$, $p < 0.001$; exhaustion, inadequacy; $r = 0.69$, $p < 0.001$; cynicism, inadequacy: $r = 0.66$, $p < 0.001$), we also investigated M3 consisting of a second-order factor of overall sport burnout and 3 first-order factors, namely, exhaustion, cynicism, and inadequacy. The goodness-of-fit indices for M3 were identical to M2, as the 2 models were data-equivalent.

The results showed that M1 did not fit to the data, but according to the goodness-of-fit indices M2 and M3 described the data well. Next, Satorra-Bentler scaled χ^2 test for difference was used to compare models M1 and M2/M3. The results showed, that the goodness-of-fit indices were superior in M2/M3 compared to M1, $\chi^2_{diff}(3) = 114.55$, $p < 0.001$. This result suggests that sport burnout can be best described with a model that contains 3 related factors (M2), or as a model that contains 3 related factors that are explained by overall sport burnout (M3).

3.2. Reliability and validity

The item reliabilities and factor loadings (i.e., standardized validity coefficients) are presented in Table 2. As shown in Table 2, the reliability and validity coefficients were lower for model M1 than for the other models. Furthermore, all of the items included in models M2 and M3 seemed to be good estimators of latent factors. The results indicate that models M2 and M3 show factorial validity and describe sport burnout as a phenomenon better than is shown by M1.

To examine internal consistency of the items in the 3 models, factor score scale reliabilities and Cronbach α reliabilities were calculated. As shown in Table 3, all of the factor score scales had good internal consistency. Furthermore, factor score scale reliabilities, which take into account the weight of each item, were higher than the Cronbach's α reliabilities. Factor score scale reliabilities were higher for M2 and M3 than for the 3 separate scales, which indicates that the 2 models (M2 and M3) show better internal consistency than the 3 separate scales.

3.3. Convergent and discriminant validity

The final step of the study was to investigate evidence of convergent and discriminant validity of the SpBI-DC by examining whether sport task-values, sport-related self-esteem, and depressive symptoms would predict sport burnout factors while accounting for gender and type of sport. Although M2 and M3 were both equally sufficient in describing the phenomenon of sport burnout, M3 was used as the final model because of its theoretical multiplicity.

First, the predictors were added to M3, and regression coefficients were estimated from sport task values, self-esteem, and depression for each latent factor (overall sport burnout,

Table 1
Means, variances, and bivariate correlations between the raw score items of the SpBI-DC.

SpBI-DC items	1	2	3	4	5	6	7	8	9	10
1. EXH 1	—	0.33	0.31	0.28	0.34	0.32	0.24	0.29	0.21	0.41
2. CYN 1		—	0.30	0.19	0.64	0.54	0.31	0.16*	0.37	0.26
3. INAD 1			—	0.35	0.44	0.42	0.62	0.41	0.48	0.39
4. EXH 2				—	0.18*	0.22	0.39	0.51	0.30	0.39
5. CYN 2					—	0.58	0.40	0.26	0.39	0.33
6. CYN 3						—	0.37	0.29	0.36	0.31
7. INAD 2							—	0.44	0.47	0.30
8. EXH 3								—	0.32	0.61
9. INAD 3									—	0.38
10. EXH 4										—
Means	2.09	1.29	2.10	1.80	1.41	1.40	1.98	2.40	1.88	1.90
Variances	0.77	0.27	0.89	0.73	0.48	0.55	1.03	1.36	1.06	0.91

Note: * $p < 0.01$, the other correlations were statistically significant ($p < 0.001$).
Abbreviations: CYN = cynicism; EXH = exhaustion; INAD = inadequacy; SpBI-DC = Sport Burnout Inventory–Dual Career Form.

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Table 2
Estimated item reliability (R^2), standardized factor loading coefficients (in parentheses), factor score scale reliabilities, and Cronbach's α values for the models.

SpBI-DC items	M1				M2			M3			
	OSpB	EXH	CYN	INAD	EXH	CYN	INAD	OSpB	EXH	CYN	INAD
EXH 1	0.23 (0.48)	0.20 (0.45)			0.22 (0.47)				0.22 (0.47)		
EXH 2	0.25 (0.50)	0.34 (0.59)			0.36 (0.60)				0.36 (0.60)		
EXH 3	0.35 (0.59)	0.64 (0.80)			0.62 (0.79)				0.62 (0.79)		
EXH 4	0.36 (0.60)	0.57 (0.76)			0.56 (0.75)				0.56 (0.75)		
CYN 1	0.33 (0.57)		0.59 (0.77)			0.55 (0.74)				0.55 (0.74)	
CYN 2	0.44 (0.66)		0.69 (0.83)			0.70 (0.84)				0.70 (0.84)	
CYN 3	0.40 (0.63)		0.49 (0.70)			0.51 (0.72)				0.51 (0.72)	
INAD 1	0.51 (0.71)			0.64 (0.80)			0.62 (0.79)				0.62 (0.79)
INAD 2	0.45 (0.67)			0.59 (0.77)			0.57 (0.76)				0.57 (0.76)
INAD 3	0.38 (0.62)			0.37 (0.61)			0.41 (0.64)				0.41 (0.64)
EXH								0.50 (0.71)			
CYN								0.45 (0.67)			
INAD								0.96 (0.98)			
Factor score scale reliability	0.93	0.89	0.91	0.89	0.90	0.92	0.91	0.90	0.90	0.92	0.91
Cronbach's α	0.85	0.74	0.80	0.78							

Abbreviations: CYN = cynicism; EXH = exhaustion; INAD = inadequacy; M1 = 1-factor model; M2 = 3-factor model; M3 = second-order factor-model; OSpB = overall sport burnout; SpBI-DC = Sport Burnout Inventory–Dual Career Form.

exhaustion, cynicism, and inadequacy). Only the statistically significant regression coefficients were included to the final model. The fit indices for the final model M3 were, $\chi^2(61) = 137.85$, $p < 0.01$; CFI = 0.94; TLI = 0.91; RMSEA = 0.06, which were considered acceptable. As shown in Fig. 2, the more depressive symptoms adolescents showed the more exhaustion they reported. Moreover, the higher self-esteem athletes reported, the less symptoms of overall sport burnout and exhaustion they reported. The higher sport interest values athletes had, the less symptoms of overall sport burnout and cynicism they reported. Finally, the higher sport utility values the athletes had, the less cynicism they reported. These results suggest that SpBI-DC has convergent and discriminant validity. Since gender, type of sport, and sport importance values were not significant predictors, the variables were excluded from the final model. As shown in Table 3, the sport importance value correlated negatively with overall sport burnout, cynicism, and inadequacy, but once all predictors were added to the same model, the relationship ceased to exist.

4. Discussion

The present study introduced a new scale for measuring sport burnout symptoms shown by adolescent dual career athletes. The first aim of the study was to investigate the construct validity of SpBI-DC. As expected, a 3-factor model or a second-order-factor model described the data better than a 1-factor model. The results showed that exhaustion, cynicism, and inadequacy were closely related, but separate constructs, which could be explained by 3 positively correlated factors (M2), or by a second-order-factor (M3), in which exhaustion, cynicism, and inadequacy are first-order-factors explained by overall sport burnout. These results are in line with the findings of school-related burnout.[21]

The second aim of the study was to investigate reliability and validity of the SpBI-DC. The results showed that M2 and M3 had good factorial validity, and the 2 models described sport burnout as a phenomenon more reliably than M1. Furthermore, the models showed good internal consistency. Consequently, sport burnout can be measured as either 3 positively correlated factors, or as a secondary-factor-model that measures overall sport burnout.

There has been a debate in the literature whether burnout can be investigated outside work-context as a 3-dimensional construct.[40,41] Some researchers argue that burnout is explicit to work-context, because outside occupational settings, a person cannot identify "something" toward which they may feel inefficacious or cynical.[40] Bianchi and colleagues[41] suggested that exhaustion, cynicism, and inadequacy can occur in any context of chronic stress. Our results support this notion, and show that among student-athletes, sport burnout can be characterized by 3 separate dimensions, namely exhaustion, cynicism toward the meaning of sport, and feelings of inadequacy as an athlete. Similar findings have been found in other studies.[12,22]

Previously in sport settings sport burnout has been measured either as a single construct (combining the 3 subscales into a single score)[42] or as a 3-dimensional construct.[12,17] Measuring burnout as a single construct has been criticized for not being

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Table 3
Correlations between the latent factors of M3, predictors, and control variables.

	OSpB	EXH	CYN	INAD	Mean	Variance
Depressive symptoms	0.13	0.22*	−0.03	0.13	1.77	0.30
Self-esteem	−0.39**	−0.21*	0.06	−0.39**	3.76	0.38
Sport interest values	−0.46**	0.02	−0.39**	−0.46**	4.71	0.12
Sport importance values	−0.20**	0.11	−0.26*	−0.20**	4.53	0.22
Sport utility values	−0.28**	0.05	−0.31**	−0.28**	4.69	0.19
Gender[a]	−0.06	−0.07	0.03	−0.06	1.49	0.25
Type of sport[b]	0.01	0.10	0.01	0.01	1.50	0.25

Notes: [a] 1 = girl, 2 = boy; [b] 1 = individual, 2 = team; * $p < 0.01$; ** $p < 0.001$.
Abbreviations: CYN = cynicism; EXH = exhaustion; INAD = inadequacy; M3 = second-order factor-model; OSpB = overall sport burnout.

interpretative of the results.[17] For example, in work-context, the exhaustion dimension may help discriminating those on sick-leave from those who are not.[43] Our results, however, suggest that sport burnout among student-athletes can be measured either as 3 separate factors or as 1 overall second-order factor depending on the research questions under concern. This kind of more flexible definition may be conceptually closer to the phenomenon. It has been recently argued that there are difficulties in the strict 3-dimensional definition of burnout.[19,43] According to the MBI manual of burnout, in order to be considered burned out, the 3 dimensions of burnout should appear simultaneously.[40] At the same time, however, the 3 subscales should be investigated as different and distinct dimensions with independent consequences and causes.[40] Consequently, there may not be correspondence between having 1 concept and 3 separate measures for it.[19] Due to these definitional difficulties, new promising tools for measuring burnout have been developed in the occupational settings.[19,44] In other settings too, such as sport and school, there should be constant investigation for finding the best theoretically grounded and conceptually coherent tools for measuring burnout.

The third aim of the study was to investigate convergent and discriminant validity of SpBI-DC by investigating meaningful predictors. As anticipated, depressive symptoms were positively related to sport-related exhaustion in particular. This finding is in line with previous studies which have shown that depression is associated with exhaustion-dimension of burnout.[30,31] This can be explained by the fact that 1 symptom of depression is

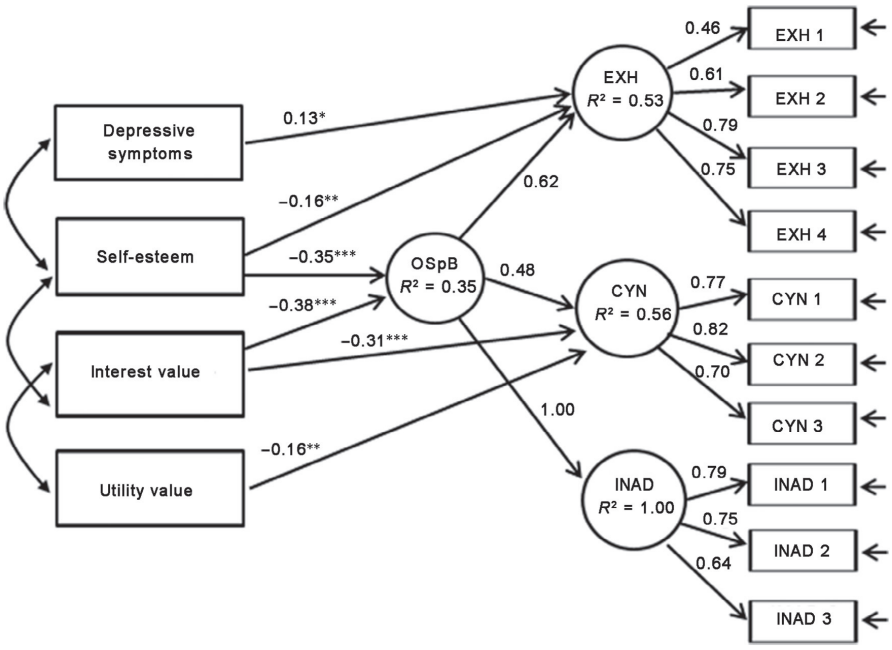

Fig. 2. Estimated M3 with predictors. Only the statistically significant regression coefficients are included. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CYN = cynicism; EXH = exhaustion; INAD = inadequacy; M3 = second-order factor-model; OSpB = overall sport burnout.

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chronic fatigue.[29] As expected, self-esteem, on the other hand, was negatively related with exhaustion and overall sport burnout. This finding is supported by previous literature.[27] When athletes' results in sport deteriorate, or they feel inadequate and exhausted in their sport, their self-esteem is likely to decline. Finally, as anticipated, sport interest values were negatively related to overall sport burnout, and sport interest and sport utility values were negatively related to cynicism. These findings are in line with previous research suggesting that lack of motivation is associated with high levels of burnout.[9,12]

Interestingly, when all predictors were added to 1 model, sport importance value was not associated with sport burnout. It is possible that because the construct is closely related to interest and utility values, it has no independent effect on sport burnout. The fact that cynicism was particularly related to sport task values can reflect adolescents' attitude change. Indifferent or distal attitude toward sport may reflect lowered motivation characterized by lack of interest in sport and perceptions that the sport is no longer useful.

The present study had some limitations. First, the study was cross-sectional. It has been noted that sport burnout should be investigated longitudinally because it is a condition which evolves over time.[45] As the study was conducted in the autumn term of the first year of upper secondary sport school it is well possible that burnout symptoms related to the dual career path were under development. Future studies are needed to investigate the development and predictors of sport burnout across time and also take into account the possible impact of the sport season. Second, the SpBI-DC scale was investigated only in 1 cultural context: Finland. Consequently, there is a need to examine the properties of the scale also in other cultural settings and in other languages. Finally, in the present study the role of time devoted to sport on burnout was not specified because initial analyses showed a non-significant relationship ($r = -0.09$, $p = 0.08$). However, the question used to assess the amount of time spent on sport may have been limited, as it did not separate between time used on practicing and competitions and time spent in other activities related to sport participation (e.g., transportation). Because these 2 components can have a distinct impact on sport burnout, future studies are needed to examine their distinct role in sport burnout.

5. Conclusion

The present study introduced a novel instrument for examining sport burnout in adolescent dual career athletes. The SpBI-DC showed good structural validity and item and scale reliability. Furthermore, when estimated in the context of depressive symptoms, self-esteem, and sport task values, the SpBI-DC showed good discriminant and convergent validity, which indicated that SpBI-DC is a valid and reliable instrument for assessing adolescent student-athletes' sport burnout symptoms in a dual career context.

Acknowledgment

This study was funded by grant from the Finnish Ministry of Education and Culture (No. OKM/13626/2015).

Authors' contributions

TVR and HS collected the data and developed the concept and the questionnaire; KA helped with the data analysis and in developing the concept and the questionnaire; KS-A participated in designing the manuscript; MS conducted the data analysis and designed and wrote the manuscript with substantial input from the other authors. All authors have read and approved the final version of the manuscript, and agree with the order of presentation of the authors.

Competing interests

The authors declare that they have no competing interests.

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II

PERSON-ORIENTED APPROACH TO SPORT AND SCHOOL BURNOUT IN ADOLESCENT STUDENT-ATHLETES: THE ROLE OF INDIVIDUAL AND PARENTAL EXPECTATIONS

by

Matilda Sorkkila, Kaisa Aunola, & Tatiana V. Ryba, 2017

Psychology of Sport and Exercise, 28, 56-67.

Psychology of Sport and Exercise 28 (2017) 58–67

Contents lists available at ScienceDirect

Psychology of Sport and Exercise

journal homepage: www.elsevier.com/locate/psychsport

A person-oriented approach to sport and school burnout in adolescent student-athletes: The role of individual and parental expectations☆

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ARTICLE INFO

Article history:
Received 25 May 2016
Received in revised form
13 October 2016
Accepted 14 October 2016
Available online 15 October 2016

Keywords:
Dual career
Sport burnout
School burnout
Success expectations
Latent profile analysis

ABSTRACT

Objectives: The present study aimed to examine what kind of burnout profiles exist among student-athletes based on their sport and school burnout symptoms. Moreover, it was investigated whether athletes' expectations of success in sport and school, on the one hand, and parental expectations, on the other hand, were predictors of the likelihood of the athlete to show a certain profile, after taking into account the effects of gender, grade point average, type of sport, and level of competition.
Design and methods: The participants were 391 student-athletes (51% females) from six different upper secondary sport schools in Finland, and 448 parents (58% mothers). The athletes filled in questionnaires about burnout and success expectations at the beginning of the first year of upper secondary school. At the same time point, parents were asked to answer a questionnaire on their success expectations for their child. Structural equation modeling and latent profile analysis were used to analyze the data.
Results: Four burnout profiles were identified: well-functioning, mild sport burnout, school burnout, and severe sport burnout. Athletes' and parents' expectations of success seemed to protect against burnout in the same domain, but this protection did not extend to the other domain. Moreover, high success expectations in one domain seemed to increase the risk for burnout in another domain.
Conclusions: Burnout needs to be investigated within and across context in order to gain a holistic understanding of student-athletes' wellbeing.

Combining an athletic career with education is demanding for talented student-athletes (Stambulova & Wylleman, 2015). Since only few athletes ever obtain a professional status, student-athletes need to strive for success in both school and sports in order to facilitate transition into labor market. It has been shown that junior elite athletes are susceptible to stress and burnout (e.g., Cresswell & Eklund, 2006; Hill, Hall, & Appleton, 2010; Raedeke & Smith, 2001), and that adolescents feel particularly pressured during the transition to upper secondary school (Salmela-Aro, Kiuru, & Nurmi, 2008). Examination of burnout in student-athletes is essential not only from the viewpoint of social costs associated with dropping out from school and sport, but also from the viewpoint of student-athletes' mental health and wellbeing. Thus far, sport and school burnout has not, however, been examined simultaneously in a single study. Consequently, little is known about the co-occurrence of different types of burnout among student-athletes. Furthermore, although it has been suggested that athletes' and parents' success expectations in sport might be important predictors of sport burnout (Hill, Hall, Appleton, & Kozub, 2008; Lemyre, Hall, & Roberts, 2008), no empirical evidence exists where success expectations in school were investigated in relation to school burnout, nor have sport and school success expectations been investigated in a dual context. The present study aimed to examine what kind of burnout profiles based on both sport and school

☆ In the present article the term sport burnout was used instead of athlete burnout to refer to burnout symptoms in sport context. The term 'sport burnout' was selected because a) this term was grammatically consistent with the term school burnout used to refer burnout symptoms in school context; b) the participants in the present study were athletes and, thus, the term ' athlete burnout' may refer to burnout that athlete experiences also in another context than sport, such as school, whereas the term 'sport burnout' refers directly to athletes' experiences in the sport context; c) the term has consistently been used parallel to school burnout in the authors' previous work (incl. a sport burnout inventory validation article; Sorkkila, Ryba, Aunola, Selänne & Salmela-Aro, submitted).

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http://dx.doi.org/10.1016/j.psychsport.2016.10.004
1469-0292/

burnout symptoms can be identified among student-athletes at the beginning of upper secondary school. Moreover, student-athletes' sport and school success expectations, on the one hand, and parental success expectations of their child, on the other hand, were examined as predictors of the burnout profile of the student-athlete, after gender, grade point average (GPA), level of sport competition, and type of sport (individual vs. team sports) were controlled for.

1. Burnout among student-athletes

The pressure associated with competitive sports and progressively increasing training load may predispose talented and elite adolescent athletes to sport burnout (Gotwals, 2011; Gustafsson, Hill, Stenling, & Wagnsson, 2015; Hill et al., 2010). Sport burnout is defined as a multidimensional construct that encompasses emotional and physical exhaustion, sport devaluation, and a reduced sense of accomplishment (Raedeke & Smith, 2001). Whereas exhaustion is a stress-related variable, the other two components reflect a negative attitude towards one's ability to perform effectively as an athlete. Emotional and physical exhaustion occur as a result of the intense demands of competition and training. A reduced sense of accomplishment refers to an athlete's feelings of inadequacy in relation to his or her skills and abilities in sport. Sport devaluation refers to a situation where an athlete stops caring about the sport and his or her own performance.

Even though sport burnout has attracted the attention of researchers in the field of sport psychology, the causes of it are not fully understood (Gustafsson et al., 2015). According to Smith (1986)'s cognitive-affective model, sport burnout develops as a result of chronic stress, when an individual constantly feels that his or her resources (e.g., social support; perceptions of competence) are inadequate to meet the situational demands (e.g., high training load; external pressure). Smith (1986) proposed that the development of burnout is process where burnout and stress evolve in parallel, under the influence of personality and motivational factors, leading finally to withdrawal from sport (see Smith, 1986). Although Smith's model has been criticized for not differentiating between sport burnout and sport withdrawal or drop out (Raedeke & Smith, 2001), the model provides a heuristic understanding of athletic burnout and has gained considerable empirical support in the context of sport (e.g., Gould, Uldry, Tuffey, & Loehr, 1996; Kelley, Eklund, & Ritter-Taylor, 1999; Raedeke & Smith, 2004).

In addition to the athletic setting, burnout can also occur in the academic setting. School burnout has been described as a continuous phenomenon that starts with minor school-related stress and ends in major burnout (Salmela-Aro, Kiuru, Pietikäinen, & Jokela, 2008). According to Salmela-Aro, Kiuru, Leskinen, and Nurmi (2009), school burnout consists of three components that are similar to those in job burnout: school-related exhaustion (i.e., chronic fatigue due to overtaxing school work), school-related cynicism (i.e., distant or indifferent attitude towards school and loss of interest in school work), and feelings of inadequacy (i.e., reduced feelings of competence and less success in school). It has been shown that 10% of adolescents in Finland experience severe school burnout (Salmela-Aro & Näätänen, 2005). However, although some studies have examined school burnout in Finnish students (e.g., Salmela-Aro & Näätänen, 2005; Salmela-Aro et al., 2008, 2009), none have examined school burnout among student-athletes. Moreover, to our best knowledge, no previous research has *simultaneously* investigated both sport and school burnout symptoms in student-athletes, even though both athletic and educational pursuits in upper secondary school have been separately shown to be stressful for adolescents (Hill et al., 2010; Salmela-Aro & Näätänen, 2005).

Drawing on Smith (1986)'s assertion that burnout is a consequence of a mismatch between situational demands and available resources, it can be hypothesized that the dual career demands faced by adolescent athletes participating in elite sport training programs may be greater than the demands faced separately in school or sport, and therefore, the dual demands may result in more severe deprivation of resources in some individuals (see Ryba et al., 2016). It is also possible that situational demands and available resources in the domains of sport and school differ for different individuals, although no empirical evidence exists investigating this proposition. For example, some athletes may have access to more resources, such as social support or perceptions of competence, in one domain and fewer resources in another domain, and therefore show symptoms of burnout only in one domain. On the other hand, some other athletes may have access to resources in both domains and find the demands of both domains manageable, and therefore show no symptoms of sport or school burnout. However, because burnout has thus far been mainly examined using a variable centered-approach (i.e., the focus has been on the relationship between different variables; for a review, see Mäkikangas & Kinnunen, 2016), little is known about the possible individual differences in burnout profiles. It has been argued that the variable-oriented approach may have limitations for examining processes in individual functioning, since it is difficult to translate the description of variables into the properties of distinct individuals (Gotwals, 2011; Gustafsson et al., 2015). Hence, when examining burnout, a person-centered approach may be more appropriate than a variable-centered approach, as burnout has been identified as a phenomenon that affects individuals and not variables (Gotwals, 2011). Consequently, the first aim of the study was to determine what kind of burnout profiles based on sport and school burnout symptoms exist among student-athletes and how are these profiles distributed in the studied population. By applying a person-centered approach, we aimed to investigate different subgroups of student athletes who have similar symptom profiles.

2. Role of athletes' and parents' success expectations in burnout

Previously, many individual characteristics have been examined as antecedents of sport burnout. For example, reduced intrinsic motivation, high perceptions of stress and anxiety, and avoidance-related goals have been associated with burnout symptoms in sport (Goodger, Gorely, Lavallee, & Harwood, 2007). In contrast, high self-expectations have been shown to be negatively related to burnout in sport (Hill, 2009). High athletic success expectations have been examined mainly in relation to multidimensional perfectionism: it has been proposed that when high success expectations and standards are imposed by one self (i.e., self-oriented perfectionism), they are negatively associated with sport burnout (Hill et al., 2008, 2008; Lemyre et al., 2008), but when they are imposed by others (i.e., socially prescribed perfectionism), they are positively associated with sport burnout (Appleton, Hall, & Hill, 2009; Hill et al., 2008), although some contradictory evidence also exists (Flett & Hewitt, 2005; Hill, 2009). Less is known about the relationship between success expectations and school burnout. Previous research has shown that higher grade point average (GPA) and growth-related goals are negatively associated with school burnout (Salmela-Aro et al., 2009, 2008; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008). Therefore, it can be expected that high success expectations in school would be negatively associated with school burnout, although empirical evidence is needed to support this notion. Consequently, the second aim of the study was to

examine how student-athlete's athletic and academic success expectations relate to their burnout profiles.

In addition to athlete's own success expectations, it has been suggested that parents also play a role in an athlete's vulnerability to burnout (Gustafsson et al., 2015). Parents can be a source of pressure or a source of support, which can either provoke or buffer athletes against burnout (e.g., Gould et al., 1996; Gustafsson, Hassmen, Kentta, & Johansson, 2008). In sport settings, high parental expectations about an adolescent's achievement have been assumed to pressure adolescents (as embedded in perfectionism) and, thus, be related to burnout symptoms (e.g., Flett & Hewitt, 2005; Hill, 2009). Similarly in school settings, parents have been shown to contribute to students' experience of stress (Aypay, 2011), although to our best knowledge only one study so far has examined the influence of parents specifically on school burnout (for a review, see Walburg, 2014). In this previous study, Aypay (2011) investigated the dimensions of school burnout in Turkish adolescents and found that in addition to three relatively equivalent dimensions of Salmela-Aro and Näätänen (2005), a fourth dimension of "burnout from the family" occurred. This "burnout from the family" was operationalized as pressuring family attitudes regarding school activities which lead to exhaustion, tension and depression.

In both athletic and academic settings, the role of parents in burnout has been mainly investigated from the viewpoint of pressure that parents put on their children to accomplish certain goals (e.g., Aypay, 2011; Gustafsson et al., 2008, 2015) and less is known about the role of parental expectations of success in the development of adolescent burnout. Even though success expectations from parents may be perceived as pressuring, past research demonstrates that parental expectations can also be supportive: that is, by having high expectations parents also express belief in the child's abilities to succeed (Aunola, Nurmi, Niemi, Lerkkanen & Rasku-Puttonen, 2002; Ommundsen, Roberts, Lemyre, & Miller, 2006). More specifically, where pressure refers to what the parent expects the child "should do", success expectations refer to what the parent expects the child "can do". Consequently, the third aim of the study was to investigate how mothers' and fathers' expectations of their child's athletic and academic success are related to the burnout profiles of adolescent athletes. Parental expectations of success were conceptualized as the extent to which parents believe in their child's ability to achieve success in sport or school.

3. The present study

In the present study, the following research questions were examined:

1. What kind of burnout profiles based on symptoms of sport and school burnout exist among student-athletes at the beginning of upper secondary school and how are these profiles distributed throughout this population?
2. How do athlete's own expectations of success in sport and school predict the likelihood of a certain burnout profile?
3. How do mothers' and fathers' expectations of their child's success in sport and school predict the likelihood of a certain burnout profile?

Because previous studies have shown several background variables, such as type of sport (individual sport vs. team sport; Cremades & Wiggins, 2008), gender (Isoard-Gautheur, Guillet-Descas, Gaudreau, & Chanal, 2015; Salmela-Aro et al., 2008), academic achievement (Salmela-Aro et al., 2008), and level of sport competition (Goodger et al., 2007), to be related to burnout, these variables were controlled for in the analyses.

4. Method

4.1. Participants and procedures

The present study is part of the ongoing Adolescent Dual Careers project in Finland that examines risk and resilience factors underpinning the dual career pathways of youth athletes attending elite athlete schools (see Ryba et al., 2016). This article is based on relevant data collected at Time 1 measurement point. The participants were 391 student-athletes (51% females) from six different upper secondary sport schools—two from Southern, two from Northern, and two from Central Finland—and 448 parents (58% mothers). In Finnish educational system, after completing 9 years of basic education at the age of 15–16, adolescents must make a decision regarding their secondary education. Secondary education comprises upper secondary or vocational education, with upper secondary school functioning as a bridge to further, most likely higher, education. Currently there are 13 upper secondary *sport* schools in Finland, labeled elite athlete school by the Ministry of Education and Culture ('urheilulukio' in Finnish), which provide young talented athletes with structural support for combining high performance sport and education. The admission to upper secondary sport schools is competitive, and in addition to students' grades in the secondary school report, the accepted students must demonstrate high potential in their own sport. Out of the participating student-athletes, 197 (50%) played individual sports (e.g., athletics or judo) and 194 (50%) played team sports (e.g., football or ice hockey) at various levels (i.e., regional, national, and international). The mean age of the student-athletes was 16 years ($SD = 0.17$). The participants practiced their sport or engaged in activities related to sport (e.g., transportation to training) for an average of 25 h ($SD = 8.99$) a week and, on average, had been competing for 7 years ($SD = 2.41$) at least in the regional level. On average, the athletes' grade point average (GPA) in their latest school report was 8.85 ($SD = 0.62$), which is evaluated in Finland on a scale from 4 to 10.

The participating schools were contacted through the national network of sports academies. The data collection was undertaken at the beginning of the first year of upper secondary school during class hours. After the participants agreed to participate by signing an informed consent form, they were asked to fill in a set of questionnaires, including questionnaires about burnout and future expectations either electronically (58%) or on paper (42%) during a class. At the same time point, a battery of questionnaires, including a questionnaire regarding expectations for their child, was sent to both parents. The parents replied either electronically (96%) or via regular mail (4%). Of the 668 parents given the questionnaires, 448 (67%) answered, consisting of 260 mothers (response rate being 66%) and 188 fathers (response rate being 48%). From all athletes, 133 had *both* mothers and fathers answering the questionnaire.

4.2. Measurements

4.2.1. Sport burnout

Sport burnout was measured using a modified version of the School Burnout Inventory (SBI; Salmela-Aro & Näätänen, 2005). The Sport Burnout Inventory (SpBI; Sorkkila, Ryba, Aunola, Selänne, & Salmela-Aro, submitted), modified based on SBI, shares its theoretical framework with the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001). The new scale for sport burnout was created in order to have equal measurements of burnout in both the school and sport domains, and allow thus optimal investigation of

burnout in a dual context. The scale consisted of 10 items measuring exhaustion when playing one's sport (4 items: e.g., *I feel overwhelmed by my sport)*, cynicism towards the meaning of one's sport (3 items: e.g., *I feel that I am losing interest in my sport*), and feelings of inadequacy as an athlete (3 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)*. The overall SpBI score was used as the indicator of sport burnout. The Cronbach alpha reliability for the total scale was 0.85. To ensure construct validity, the scale was correlated with the ABQ (Raedeke & Smith, 2001) in a sample of 20 athletes. Pearson's correlation coefficient was 0.726 ($p < 0.001$), which was considered acceptable. The SpBI scale has demonstrated to show good convergent and discriminant validity, as well as good item and scale reliability (Sorkkila et al., submitted). In the present study, one unit of standard deviation above the sample mean was considered to indicate an elevated risk for sport burnout, and two units of standard deviation above the sample mean was considered to indicate a severe risk for sport burnout. Such criteria were chosen because of the novelty of the scale and lack of standardized cut off-points in Finnish student-athletes. Standard deviations have been used as criteria of burnout risk also in previous studies (Oerlemans & Bakker, 2014).

4.2.2. School burnout

School burnout was measured using SBI (Salmela-Aro & Näätänen, 2005). The inventory consists of 10 items measuring 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 that I am not doing well in school*). All items were rated on a 5-point Likert scale (1 = *completely disagree*; 5 = *completely agree)*. The Cronbach alpha reliability coefficient for the total scale was 0.88. One unit of standard deviation above the sample mean was considered to indicate an elevated risk for school burnout, and two units of standard deviation above the sample mean was considered to indicate a severe risk for school burnout. The criteria were chosen in order to gain equal criteria for evaluating the symptoms of burnout in both sport and school contexts.

4.2.3. Success expectations in sport

Athletes' success expectations in sport were measured using the Success Expectations Scale, which is a subscale of the Strategy and Attribution Questionnaire (Nurmi, Salmela-Aro, & Haavisto, 1995). The scale measures the extent to which one expects to succeed in a task and is not overly apprehensive of failure. The scale was modified to fit the sports context, and it consisted of five items (e.g., *When I go into competitions, I usually expect that I will succeed*) rated on 4-point Likert scale (1 = *completely disagree*; 4 = *completely agree*). Cronbach alpha reliability coefficient for the Success Expectations Scale was 0.63.

4.2.4. Success expectations in school

Athletes' success expectations in school were similarly measured using the Success Expectations Scale (Nurmi et al., 1995), which was modified for the school context. The scale consisted of five items (e.g., *When I go into exams, I usually expect that I will succeed)* rated on 4-point Likert scale (1 = *completely disagree*; 4 = *completely agree*). The Cronbach alpha reliability coefficient for the Success Expectations Scale was 0.77.

4.2.5. Parental success expectations in sport

Parental success expectations in sport were measured using a modified version of the parental beliefs questionnaires used by

Table 1
Means (M), standard deviations (SD), and bivariate correlations between the study variables (n = 391).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Sp Ex		0.425***	0.546***	0.483***	0.232***	0.371***	−0.483***	−0.299***	−0.014	−0.001	−0.023	−0.065	−0.156**	0.038	. 021	0.096
2. Sp Cy			0.527***	0.166**	0.204***	0.171**	−0.331***	−0.082	−0.122*	0.053	−0.115	0.023	−0.070	0.077	−0.006	−0.009
3. Sp In				0.202***	0.111*	0.265***	−0.588***	−0.166**	−0.222***	−0.053	−0.181*	−0.017	−0.120*	−0.032	0.067	−0.068
4. Sc Ex					0.367***	0.605***	−0.315***	−0.540***	0.035	−0.159**	0.082	−0.159*	−0.140**	0.027	−0.014	0.026
5. Sc Cy						0.672***	−0.125*	−0.382***	0.132	−0.305***	0.077	−0.259***	0.172***	0.053	−0.306***	0.023
6. Sc In							−0.269***	0.623***	0.100	−0.407***	0.087	−0.357***	0.029	0.069	−0.325**	−0.007
7. A SpE								0.336***	0.175**	0.064	0.044	0.015	0.265***	0.123*	−0.059	−0.011
8. A ScE									0.000	0.469***	−0.146*	0.428***	0.174***	−0.022	0.415***	0.098
9. M SpE										0.117*	0.230**	−0.018	0.087	0.079	−0.054	0.217***
10. M ScE											−0.075	0.781***	−0.059	−0.037	0.676***	0.099
11. F SpE												−0.014	−0.079	0.093	0.032	0.179*
12. F ScE													−0.060	−0.124*	0.625***	−0.002
13. G														0.099*	−0.228**	−0.134**
14. TOS															−0.058	−0.221***
15. GPA																0.005
16. CL																
M	2.04	1.36	1.98	2.68	2.19	2.52	2.88	2.59	3.54	2.97	3.47	2.93	0.49	0.50	8.85	4.64
SD	0.72	0.55	0.82	0.83	0.74	0.81	0.46	0.53	0.50	0.63	0.46	0.65	0.50	0.50	0.62	2.67

Note. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.
Sp Ex = Sport exhaustion; Sp Cy = Sport cynicism; Sp In = Sport inadequacy; Sc Ex = School exhaustion; Sc Cy = School cynicism; Sc In = School inadequacy; A SpE = Athletes 'success expectations in sport; A ScE = Athletes' success expectations in school; M SpE = Mothers' success expectations for her child in sport; M ScE = Mothers' success expectations for her child in school; F SpE = Fathers' success expectations for his child in sport; F ScE = Fathers 'success expectations for his child in school; G = Gender (female/male); TOS = type of sport (individual/team sport); GPA = Grade point average; CL = Competition level.

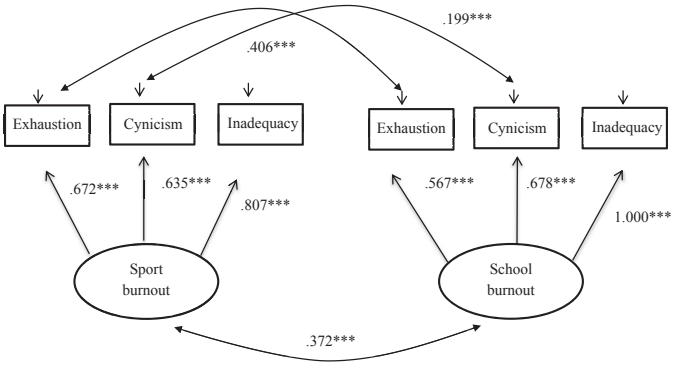

Fig. 1. The parameter estimates of the final structural model.

Frome and Eccles (1998). The scale consisted of three items (e.g., *How well do you think your child will do at sport later on?)* rated on a 4-point Likert scale (1 = *not very well*; 4 = *very well*). The Cronbach alpha reliability coefficient for the scale was 0.80 for mothers and 0.73 for fathers.

4.2.6. Parental success expectations in school

Parental success expectations in school were measured using a modified version of the parental beliefs questionnaires used by Frome and Eccles (1998). The scale consisted of two items measuring general school beliefs (e.g., *In general, how well do you think your child will do at school later on?*) and four items measuring skill-specific school beliefs (e.g., *How well do you think your child will do in math later in school?)* rated on a 4-point Likert scale (1 = *not very well*; 4 = *very well*). An overall score consisting of the sum of the general and skill-specific beliefs was used as an indicator of parental success expectations in school. The Cronbach alpha reliability coefficient for the overall scale was 0.89 for mothers and 0.91 for fathers.

4.3. Analysis strategy

The statistical analyses were carried out using structural equation modeling (SEM) and latent profile analysis (LPA) with the M-plus package (Muthén & Muthén, 2012). The analyses were carried out in four steps.

First, measurement models for school and sport burnout were constructed using burnout subscales, i.e., exhaustion, cynicism, and inadequacy, as indicators of latent burnout constructs. The parameters of the model were estimated using the full-information maximum likelihood (MLR) procedure. Goodness-of-fit was evaluated using three indicators: (1) χ^2-test, (2) Bentler (1990)'s comparative fit index (CFI), and (3) and root mean square error of approximation (RMSEA). Based on the criteria of Hu and Bentler (1999), values above 0.95 for CFI and values below 0.08 for RMSEA were considered to indicate acceptable fit.

Second, LPA was used to identify groups based on latent sport and school burnout constructs. In the present study, the Akaike information criterion (AIC), Bayesian information criterion (BIC), Vuong-Lo-Mendell-Rubin likelihood ratio (VLMR), Lo-Mendell-Rubin adjusted likelihood ratio (LMR), bootstrap likelihood ratio (BLRT), and entropy were used as the statistical criteria for choosing the model with the best fit. The model with lower AIC and BIC values was considered to be a better fit to the data, and significant *p*-values for VLMR, LMR, and BLRT indicated that the model with one less class should be rejected in favor of the estimated model. Entropy indicates the precision with which the cases are classified into the different latent profiles: the larger the value and the closer it is to 1, the lesser is the classification error in the model. In addition to the statistical criteria, class sizes and theoretical interpretation of the classes were taken into account while choosing the final model.

Third, athletes' and their parents' expectations were added to the final LPA separately to predict class membership through multinomial logistic regression. Multinomial logistic regression is an appropriate analysis to conduct when having a nominal dependent variable with two or more classes. In this analysis, the associations of athletes' and parents' expectations with the found latent classes were estimated in the logit scale. When predicting athletes' probability to show a certain profile, each latent class was used, in turn, as reference class.

Finally, the covariates, i.e., gender, GPA, type of sport, and level of sport competition, were included in the model to determine whether the results would remain the same after their impact was taken into account. The mean (*M*) and standard deviation (*SD*) values, as well as the bivariate correlations between all variables are shown in Table 1.

5. Results

5.1. Measurement models

The measurement model used for evaluating school burnout was first tested using school-related exhaustion, cynicism, and inadequacy as indicators of latent school burnout. Due to a negative error variance, the residual of inadequacy was fixed at zero. The fit of the model was good (χ^2 (1) = 1.356, p = 0.244; CFI = 0.999; RMSEA = 0.030). Next, the measurement model for sport burnout was tested using sport-related exhaustion, cynicism, and inadequacy as indicators of latent sport burnout. The model was saturated, i.e. the fit of the model was perfect. Finally, the models for sport and school burnout were combined (χ^2 (9) = 87.115; p < 001; CFI = 0.878; RMSEA = 0.149). An inspection of the modification indices suggested that allowing (1) the residual terms of school-related exhaustion and sport-related exhaustion and (2) those of school-related cynicism and sport-related cynicism to correlate would increase the fit of the model. After these specifications, the model was found to fit the

data relatively well (χ^2 (7) = 26.870; $p < 0.01$; CFI = 0.969; RMSEA = 0.085). The parameter estimates of the final model are presented in Fig. 1.

5.2. Latent profile analysis

Next, a series of LPAs with latent school and sport burnout constructs as criteria variables were conducted. The results showed that the four-class solution fit the data best (see Table 2 for the fit indices) based on statistical criteria and a theoretical interpretation of the classes. The five-class solution was supported by AIC, BIC, and the entropy values, but the solution was rejected in favor of the four-class solution based on the values of VLMR, LMR, and BLRT. Moreover, a theoretical interpretation of the solution and an inspection of the cluster sizes were in support of the four-class solution rather than the five-class solution. In the four-class solution, the individual probabilities for being assigned to a specific latent class were 0.921, 0.717, 0.916, and 0.997, which indicates that the four-class model provided clear classification. The four groups were labeled according to the mean standardized profile scores as (1) well-functioning, (2) mild sport burnout, (3) school burnout, and (4) severe sport burnout (see Fig. 2).

Table 2
Information criteria values for different class solutions.

Number of classes	AIC	BIC	Entropy	VLMR	LMR	BLR
1	4626.880	4690.380				
2	4605.455	4680.861	0.660	0.0753	0.0851	0.0000
3	4600.177	4687.489	0.646	0.2920	0.3110	0.0404
4	4586.876	4686.094	0.828	**0.0000**	**0.0000**	**0.0400**
5	**4564.785**	**4671.974**	**0.875**	0.2677	0.2904	0.0909
6	4566.785	4677.066	0.871	0.2398	0.2398	0.1714

AIC = Akaike information criterion, BIC = Bayesian information criterion, VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio, LMR = Lo-Mendell-Rubin adjusted likelihood ratio, BLR = bootstrap likelihood ratio.
Note. Values in bold represent the best fitting solution.

As illustrated in Fig. 2, the well-functioning group was the largest group (60%), as the student-athletes in this group had scores *below* the sample mean for both sport burnout ($zM = -0.30$; $M = 1.58$, *s.e.* = 0.08) and school burnout symptoms ($zM = -0.32$; $M = 2.23$, *s.e* = 0.10), this group showed no risk for school burnout. The mild sport burnout group was the second largest group (28%). The student-athletes in this group had sport ($zM = 0.61$; $M = 2.64$, *s.e.* = 0.11) and school ($zM = 0.22$; $M = 2.74$, *s.e.* = 0.17) burnout scores *above* the sample mean. However, according to the set criteria, they were not considered to be at an elevated risk for sport or school burnout. Since their sport burnout scores still exceeded 0.5 units of the standard deviation, a mild risk for sport burnout was recognized. The school burnout group was the third largest group (9.6%), and student-athletes in this group had sport burnout symptom scores *below* the sample mean ($zM = -0.29$; $M = 1.70$, *s.e.* = 0.11), and school burnout symptom scores *above* the sample mean ($zM = 1.30$; $M = 3.62$, *s.e.* = 0.22). Based on the set criteria, the group was considered to be at an elevated risk for school burnout. The smallest group was the severe sport burnout group (2.7%). In this group, the student-athletes had sport burnout symptom scores that were almost two standard deviations *above* the sample mean ($zM = 1.98$; $M = 4.06$, *s.e.* = 0.47), whereas the school burnout symptom scores were within one unit of standard deviation ($zM = 0.50$, $M = 2.78$, *s.e.* = 0.27). Based on the criteria set, this group was at a severe risk for sport burnout.

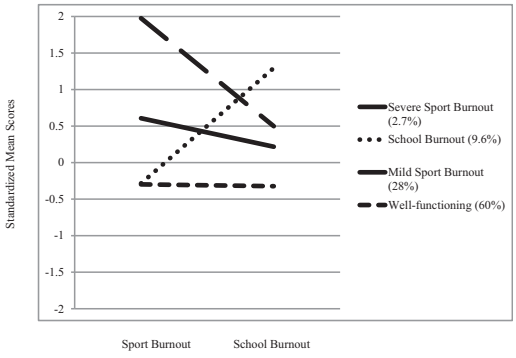

Fig. 2. Identified burnout profiles among student athletes.

5.3. Role of student-athletes' success expectations

The student-athletes' own success expectations in sport and school were examined as predictors of the likelihood of a certain burnout profile. The results are presented in Table 3. The results showed that the higher success expectations in sport the athletes had, the more likely they were to belong to the well-functioning group than to the severe sport burnout group or the mild sport burnout group, and the higher success expectations in school the athletes reported, the more likely they were to belong to the well-functioning group than to the school burnout or mild sport burnout group. However, the higher success expectations in school the athletes reported, the more likely they were to belong to the severe sport burnout group than to the well-functioning group, and the higher success expectations in sport the athletes reported, the more likely they were to belong to the school burnout group than to the well-functioning group. The results further showed that the higher success expectations in sport the athletes had, the more likely they were to belong to the school burnout group or the mild sport burnout group than to the severe sport burnout group, and the higher success expectations in school the athletes reported, the more likely they were to belong to the severe sport burnout group than to the school burnout group or to the mild sport burnout group. Finally, the results showed that the higher the success expectations in sport, the more likely the athletes' were to belong to the school burnout group than to the mild sport burnout group, and the higher success expectations in school, the more likely the athletes were to belong to the mild sport burnout group than to the school burnout group.

Table 3
Athletes' and parents' success expectations in sport and school as predictors of burnout class (estimates and standard errors for multivariate logit coefficients).

Class	Athlete		Mother		Father	
	Sport	School	Sport	School	Sport	School
	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)
Well-functioning						
vs. Severe sport burnout	−6.891 (2.249)**	5.726 (1.271)***	−0.774 (0.337)*	0.527 (0.722)	−0.876 (1.281)	−0186 (0.644)
vs. School burnout	0.658 (0.570)	−4.067 (0.933)***	1.240 (0.740)	−2.815 (0.847)**	0.384 (0.636)	−1.916 (0.647)**
vs. Mild sport burnout	−3.083 (0.848)***	−2.420 (0.684)***	−0.122 (0.511)	−2.600 (0.733)***	−0.682 (1.532)	−1.093 (0.527)*
Severe sport burnout						
vs. School burnout	7.549 (2.231)**	−9.793 (1.529)***	2.014 (0.820)*	−3.342 (1.223)**	−1.260 (1.401)	1.730 (0.942)
vs. Mild sport burnout	3.808 (2.095)	−8.146 (1.396)***	0.652 (0.641)	−3.127 (0.942)**	−0.194 (2.687)	−0.907 (0.805)
School burnout						
vs. Mild sport burnout	−3.741 (0.863)***	1.647 (0.743)*	−1.362 (0.556)*	0.215 (0.781)	−1.066 (1.667)	0.823 (0.568)

Note. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Next, gender, type of sport, GPA and level of sport competition were included in the model as predictors of burnout profiles. The associations of individual expectations with burnout profiles did not substantially change after the covariates were added.

5.4. Role of parental success expectations

Finally, mothers' and fathers' success expectations as predictors of burnout profiles were investigated. First, mothers' success expectations in sport and school were examined as predictors of burnout profiles (see Table 3). The results showed that the higher success expectations in sport the mother had, the more likely it was that the athlete belonged to the well-functioning group than to the severe sport burnout group, and the more likely it was that the athlete belonged to the school burnout group than to the severe sport burnout group. Furthermore, the higher the success expectations in sport the mother reported, the more likely it was that the athlete belonged to the school burnout group than to the mild sport burnout group. The higher success expectations in school the mother had, the more likely it was that the athlete belonged to the well-functioning group than to the school burnout or mild sport burnout group. Moreover, the higher success expectations in school the mother had, the more likely it was that the athlete belonged to the severe sport burnout group than to the school burnout group or the mild sport burnout group.

Next, the covariates were included in the model as predictors of burnout profiles. The results showed that the associations of maternal expectations with burnout profiles did not substantially change after the covariates were added.

The results for fathers' success expectations (Table 3) showed that the higher the success expectations in school of the father, the more likely it was that the athlete belonged to the well-functioning group rather than the school burnout or the mild sport burnout group. After covariates were added to the model, it was found that high paternal success expectations in school still increased the likelihood of athletes belonging to the well-functioning group instead of the school burnout group, but the success expectations no longer increased the likelihood of the athletes belonging to the well-functioning group instead of the mild burnout group. Moreover, after the covariates were added, it was found that the higher the paternal success expectations were in school, the more likely it was that the athletes belonged to the severe sport burnout group than to the school burnout group (*estimate* $= -1.527$, *s.e* $= 0.776$, $p < 0.05$).

5.5. Additional analyses

To ensure that the sample was not selective based on whether the parents participated or did not participate in the study, mothers', fathers' or both parents' participation was examined as a predictor of burnout profile. The results showed that the athletes' burnout profile did not depend on whether the mother, father, or both parents had participated in the study or not.

Finally, because the items of success expectations and inadequacy subscale of burnout are conceptually close to each other confirmatory factor analyses was used to investigate whether they are opposite ends of the same construct or two different constructs. The results comparing one factor (consisting of both expectations and inadequacy items) vs. two factor (consisting of two separate factors for expectations items and inadequacy items, respectively) model showed that the two factor model fitted the data significantly better than the one factor model in both sport ($\chi^2(1) = 5.79$; $p < 0.05$) and school ($\chi^2(1) = -336.64$; $p < 0.001$) context. Moreover, there were no modification indices over 10 in either domain. The results suggest that success expectations and feelings of inadequacy are two different, although strongly correlated constructs.

6. Discussion

The present study aimed to investigate the burnout profiles of student-athletes and to what extent athletes' and their parents' success expectations predict the likelihood of the athlete reporting a certain burnout profile. Four different burnout profiles were identified: well-functioning, mild sport burnout, school burnout, and severe sport burnout. Based on the cut-off points, athletes in the well-functioning group and mild sport burnout group were not at an elevated risk for school or sport burnout; athletes in the school burnout group were at an elevated risk for school burnout; and athletes in the severe sport burnout group were at a severe risk for sport burnout. Furthermore, athletes' and mothers' success expectations in sport and school, and fathers' success expectations in school were found to be significant predictors of the likelihood of the athletes to show a certain burnout profile. High individual and parental expectations in one domain seemed to increase the likelihood of the athlete to belong in the well-functioning group in the same domain, but the effect did not extend across domains. Moreover, high expectations in one domain seemed to even increase the likelihood of burnout in another domain.

6.1. Burnout profiles

Our first research question was set to determine the profiles of burnout in student-athletes based on their reported symptoms of burnout in athletic and academic contexts, and to investigate how these profiles are distributed in the studied population. Four

burnout profiles were identified: (1) a well-functioning profile, characterized by a low level of both sport and school burnout symptoms, which was shown by 60% of the student-athletes; (2) a mild sport burnout profile, characterized by a mild level of sport burnout symptoms, which was shown by 28% of the student-athletes; (3) a school burnout profile, characterized by a relatively high level of school burnout symptoms but a low level of sport burnout symptoms, which was shown by 9.6% of the student-athletes; (4) and a severe sport burnout profile, characterized by a high level of sport burnout symptoms, which was shown by 2.7% of student-athletes.

Based on the set cut off points for sport and school burnout, it was concluded that athletes showing a well-functioning profile were not at risk for either type of burnout. This indicates that at the beginning of upper secondary school, the majority of student-athletes did not experience burnout symptoms. The second largest group of athletes showed a mild sport burnout profile. Although they were not at an elevated risk for sport or school burnout, they still reported some symptoms of burnout in sport. Since the measurements were conducted at the very beginning of upper secondary school, it is possible that the symptoms in this group will increase with time. Therefore, it is particularly important to follow the development of sport and school burnout longitudinally, and pay attention to student-athletes with a mild risk of burnout too.

In the present study, two groups of student-athletes were found to be at risk for burnout: those showing a school burnout profile and those showing a severe sport burnout profile. The school burnout profile was typical for 9.6% of the student-athletes, which is in line with previous findings which suggested that 10% of upper secondary school students in Finland suffer from severe school burnout. The severe sport burnout profile, in turn, was typical in 2.7% of the student-athletes, which suggests that there is a small but still alarming group of student-athletes who are at risk for severe sport burnout. This finding is in line with previous research which has shown that young elite athletes are susceptible to burnout (Cresswell & Eklund, 2006; Raedeke & Smith, 2001), and that transition to upper secondary school is a particularly stressful time for adolescents (Salmela-Aro et al., 2008). However, it should be noted that sport and school burnout have previously not been investigated simultaneously in a single study. The findings of the present study highlight the need for continuous screening and early detection of burnout in student-athletes who are at risk for burnout, since it seems that severe burnout symptoms may appear even at the very beginning of upper secondary school in some individuals.

6.2. Role of student-athletes' success expectations

The second research question of the present study asked whether athletes' own success expectations in sport and school can predict their burnout profile. The results showed that athletes' expectations could predict their burnout profile even after the impact of gender, type of sport, GPA and level of sport competition were controlled for: the higher success expectations in sport the athletes had, the more likely they were to show a well-functioning profile than a severe sport burnout or a mild sport burnout profile, and the higher success expectations in school the athletes had, the more likely they were to show a well-functioning profile than a school burnout or a mild sport burnout profile. These results are in agreement with previous research which has suggested that high self-expectations protect against burnout (Appleton et al., 2009; Hill, 2009; Hill et al., 2008). According to Smith (1986)'s cognitive-affective model, burnout is a result of chronic stress that occurs when the athlete's resources do not meet the situational demands. It could be assumed that student-athletes showing a well-functioning profile had access to more resources in *both* the school and sport domains, and perceived school and sport as less demanding than those who showed other profiles. It is possible that high success expectations are an indicator of confidence, which among other psychological needs has been found to be protective against burnout (Jowett, Hill, Hall, & Curran, 2016).

However, the protective effect of high success expectations appears to be domain-specific and may not extend *across* domains. In other words, although high success expectations in sport seemed to protect student-athletes from sport burnout, high success expectations in sport did not protect them against school burnout, and vice versa. Student-athletes with high success expectations in *school* were more likely to show severe *sport* burnout profile than other profiles, and student-athletes with high success expectations in *sport* were more likely to show *school* burnout profile than other profiles. This finding is significant, as it suggests that burnout is a context-specific phenomenon. The finding also highlights the need to investigate burnout in both the sport and school domain, as high expectations and low burnout in one domain may increase the burnout risk in another domain.

6.3. Role of parental success expectations

The third research question asked whether the success expectations of mothers and fathers are related to athletes' burnout profiles. The results showed that mothers' success expectations were relatively in line with the athletes' expectations with regard to prediction of the burnout profiles: the higher success expectations in sport the mother had, the more likely it was that the athlete showed a well-functioning profile instead of a severe sport burnout profile; further, the higher success expectations in school the mother had, the more likely it was that the student-athlete showed a well-functioning profile than a school burnout or a mild sport burnout profile. Moreover, the higher success expectations in school the mother reported, the more likely it was that the student-athlete had a severe sport burnout profile than a school burnout or a mild sport burnout profile. Finally, the higher success expectations in school the mother reported, the more likely it was that the student-athlete had a school burnout profile than a severe sport burnout or a mild sport burnout profile. The results further showed that fathers' success expectations in sport were not related with the athletes' burnout profiles. However, fathers' success expectations in school were partly in line with mothers' and athletes' expectations with regard to predicting burnout profiles: The higher success expectations in school the father reported, the less likely it was that the athlete showed a school burnout profile than a well-functioning or a severe sport burnout profile.

Previous research embedded in perfectionism suggests that high athletic expectations from significant others increase the risk for sport burnout (e.g., Hill, 2009; Hill et al., 2008). Similarly, in the school context, previous research has shown that high parental pressure, in terms of family attitudes regarding school leading to exhaustion, tension and depression, is associated with school burnout (Aypay, 2011). Our results are contradictory to these findings, as they indicate that high success expectations in school from the mother and father increase the likelihood of the student-athlete to show a well-functioning profile instead of a school burnout profile.

The difference in our findings can be explained in a number of ways: First, instead of examining parental pressure, we examined parental success expectations, which can be positive and indicate parental support (e.g., Aunola et al., 2002). Whereas parental pressure refers to what parents think their children “should” do, parental success expectations may rather refer to what the parents

think their children "can" do, and can therefore reflect encouragement instead of entrapment. Embedded in Smith model (1986)'s, it is possible that in additional to internal resources (high self-expectations) well-functioning student-athletes also have more external resources (nurturing environment) than other student-athletes, as mothers' high success expectations in sport were found to be a predictor of a well-functioning profile, as were mothers' and fathers' success expectations in school. Second, in the previous studies, adolescents' perceived parental expectations were investigated, whereas we only examined parents' self-reports. Third, in the present study, success expectations were investigated separately from perfectionism. The results did indicate, though, that high success expectations by the mother and father in one domain may increase an athletes' likelihood of burnout in *another* domain. The higher the success expectations in school of the mother and father, the more likely it was that the student-athlete had a severe sport burnout profile than a school burnout profile. Moreover, the higher success expectations in sport the mother had, the more likely it was that the student-athlete showed a school burnout profile than a severe sport burnout or mild sport burnout profile. This in an important finding that is similar to that obtained for student-athletes' success expectations and highlights the need to examine burnout in not only in a context-specific manner but also across context.

Based on Smith (1986)'s model, it can be assumed that those showing a sport burnout profile had fewer resources and more demands in sport than in school. In line with this proposition, it was observed that the higher the individual and maternal success expectations in sport, the more likely it was that the athletes had a school burnout profile rather than profiles characterized by sport burnout symptoms. Moreover, athletes', mothers' and fathers' high success expectations in school decreased the likelihood of athletes showing a school burnout profile. This indicates that student-athletes showing a profile characterized by school burnout may be sport oriented, and feel more competent and supported in sport than in school.

Athletes showing a severe athlete burnout profile, on the other hand, may have few resources and experience a high level of demand in sport in particular. Since athletes showing this profile had specifically high success expectations in school, it is possible that these athletes are school-oriented and seek success in school. However, due to the high demands in sport, they may lack the time and energy required to focus on schoolwork to their satisfaction. It is also possible that athletes who showed a severe sport burnout profile aligned their own success expectations in school according to their parents' expectations, and consequently, felt pressured to live up to the expectations. Thus, trying to live up to high self and parental academic expectations, while simultaneously participating in high-level sport might come at a cost that exceeds the available resources.

6.4. Evaluation of the study

The present study had several strengths. First, it was able to provide meaningful and novel information about the prevalence of sport and school burnout in the unique sample comprised of student-athletes on a dual career track at elite sport schools. Moreover, the study investigated burnout in the context of both sport and school simultaneously. Second, the sample was large and representative, and in addition to the student-athletes, data were gathered also from a large sample of mothers and fathers separately. Third, a person-oriented approach was used, which has been proposed to be appropriate for exploring burnout (Gotwals, 2011; Gustafsson et al., 2015; Mäkikangas & Kinnunen, 2016).

However, the study also has several limitations. First, the study was cross-sectional in nature, although it has been noted that burnout is a condition that develops over time and should therefore be investigated longitudinally (Chen, Kee, & Tsai, 2009). Furthermore, in cross-sectional studies causality between the variables cannot be assumed. Even though it seems like success expectations were protective from burnout within the domain, reverse direction is also possible (e.g., burnout profiles may influence success expectations). Future studies are therefore needed to examine the predictors and developmental trajectories of burnout across school years. Second, although set cut-off points were used to guide our interpretation of the burnout level, the study focused on burnout symptoms and not diagnoses, and therefore no clinical conclusions can be drawn from the results. Third, the group size for the severe sport burnout profile was small. Consequently, further studies are needed to explore the existence of this particular profile among student athletes. Fourth, Cronbach's alpha coefficient for athletes' success expectations scale in sport was not very high. One reason possibly reducing the reliability of the scale was the small number of items measuring athletes' success expectations (see Wells & Wollack, 2003). Consequently, there is a need to replicate the findings with a scale demonstrating higher internal reliability. Finally, the concept of success expectations is closely related with the concept of self-confidence or self-efficacy. This raises the question whether the association between being in a well-functioning group and having high success expectations is due to the fact that success expectations and feelings of inadequacy are indicators of the same construct. Although confirmatory factor analyses demonstrated that in the present study these two concepts were separate but highly related constructs, further longitudinal research is needed to investigate the relationship and direction between success expectations and the three burnout dimensions separately to further clarify these concepts.

7. Conclusion

This study contributes to the current literature on burnout by adding new knowledge about the existence of different sport and school burnout profiles among student-athletes at the beginning of upper secondary school. Although at this time point a majority of the student-athletes seemed to be well-functioning, two profiles with elevated school burnout and elevated sport burnout risk were also identified. Moreover, a relatively large number of student-athletes were found to show mild symptoms of sport burnout even though they were not yet at risk of burnout. Across school years, however, these student-athletes may be prone to develop more severe burnout symptoms.

Athletes' success expectations in sport seem to protect them from sport burnout, and their success expectations in school seem to protect them from school burnout, but the protective effects cease to exist across domains. Moreover, the results indicated that in some individuals, high success expectations in one domain may increase the risk of burnout in another domain. Contrary to what was expected, it seems that mothers' success expectations in sport and school, and fathers' success expectations in school were mainly protective against burnout in the same domain; this suggests that parental expectations can be a supportive factor. However, similar to findings for athletes' expectations, it seems that high success expectations in one domain do not necessarily protect against burnout in another domain. These are novel intriguing findings which suggest that burnout is a context-specific phenomenon. Moreover, the findings highlight the need to investigate burnout within *and* across context by integrating sport and school in order to make holistic and comprehensive assumptions about athletes' wellbeing.

Acknowledgements

This study was funded by grant from the Finnish Ministry of Education and Culture (grant number OKM/13/626/2015).

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III

DEVELOPMENT OF SCHOOL AND SPORT BURNOUT IN ADOLESCENT STUDENT-ATHLETES: A LONGITUDINAL MIXED METHODS STUDY

by

Matilda Sorkkila, Tatiana V. Ryba, Harri Selänne, & Kaisa Aunola, 2018

Provisionally accepted manuscript in *Journal of Research on Adolescence.*

IV

THE CO-DEVELOPMENTAL DYNAMIC OF SPORT AND SCHOOL BURNOUT AMONG STUDENT-ATHLETES: THE ROLE OF ACHIEVEMENT GOALS

by

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Scandinavian Journal of Medicine and Science in Sport, 28, 1731-1742.

Accepted: 8 February 2018

DOI: 10.1111/sms.13073

ORIGINAL ARTICLE

WILEY

The co-developmental dynamic of sport and school burnout among student-athletes: The role of achievement goals

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Funding information
This study was funded by grant from the Finnish Ministry of Education and Culture (grant number OKM/13/626/2015) to Tatiana Ryba

Student-athletes who strive for success in high-level sports while pursuing upper secondary education may be prone to sport and school burnout. This study examined the co-developmental dynamic of sport and school burnout in Finnish adolescent student-athletes ($N^{time\ 1} = 391$; $N^{time\ 2} = 373$) across the first year of upper secondary school using cross-lagged structural equation modeling (SEM). Furthermore, we used sport and school-related achievement goals as predictors of sport and school burnout, namely sport and school-related exhaustion, cynicism, and feelings of inadequacy. The results showed that burnout dimensions in a particular domain were substantially stable within the same domain during the first year of upper secondary school and that school-related exhaustion at the beginning of upper secondary school predicted sport-related exhaustion at the end of the school year. Mastery goals in sport and school were negatively associated with cynicism and feelings of inadequacy within the same domain. Furthermore, performance goals in school were positively associated with school-related cynicism. The results can be used by healthcare professionals for early prevention of student-athletes' burnout.

KEYWORDS
achievement goals, dual career, school burnout, sport burnout, structural equation modeling

1 | INTRODUCTION

Student-athletes who combine high-level sport career with upper secondary education may be prone to sport and school burnout due to pressure from two intertwined domains. Only few athletes ever become professional, and to secure transition into the labor market, student-athletes need to strive for success in both sport and school. A recent study showed that student-athletes demonstrate sport and school burnout symptoms already in the very beginning of upper secondary school.[1] The two types of burnout can have serious consequences for adolescents, including mental health problems[2,3] and dropping out of sport[4] and school.[5] Nevertheless, the co-developmental dynamic of sport and school burnout has not yet been investigated. Consequently, the aim of this study is to investigate the developmental dynamic of school and sport burnout across the first year of upper secondary school. Because achievement goals, conceptualized as the purpose of competence-related behavior,[6] have previously been independently associated with sport[7] and also school burnout,[8,9] the aim of this study was also to examine how school- and sport-related achievement goals predict the development of sport and school burnout.

1.1 | Development of sport and school burnout in student-athletes

Adolescent athletes aiming at elite athletic career devote a significant amount of physical and psychological effort to reach their goal. In most sports, during the age of 16-18, athletes begin their critical transition from junior to senior sports, during which training and competitions intensify.[9] For some

athletes, the pressure to succeed may result in chronic stress and even burnout.[10] Sport burnout has been defined as (a) sport-related exhaustion (ie, chronic fatigue related to overtaxing in sport); (b) sport-related cynicism (ie, indifferent or distal attitude toward sport); and (c) feelings of inadequacy as an athlete (ie, perception of not performing as well as one used to in sport).[11] Although it has been repeatedly argued that burnout is a condition that evolves over time, only few studies have investigated the development of sport burnout.[12,13] It has been shown that sport burnout among adolescent athletes may be relatively stable over time[12] although it has been noted that the phenomenon needs to be investigated with a longer time frame.[12,13] It has been suggested that in the long run, sport burnout might generalize to other life areas as well, as one may lose interest in activities that used to be enjoyable.[14]

Athletes, who pursue their sport career simultaneously with education, may be at risk of burning out in two life domains, that is, sport and school. Transition to upper secondary school has been shown to be particularly stressful for adolescents, possibly due to increasing academic demands and changes in sources of social support.[15] It was recently shown that within the past 2 years, school burnout increased 30% among Finnish upper secondary school girls.[16] School burnout has been defined in parallel to sport burnout as a three-dimensional construct consisting of: (a) school-related exhaustion (ie, chronic fatigue related to overtaxing in school); (b) school-related cynicism (ie, indifferent or distal attitude toward school); and (c) feelings of inadequacy as a student (ie, perception of not performing as well as one used to in school)0.[17,18] School burnout has been shown to increase across upper secondary school.[15,19] Furthermore, cross-lagged studies have shown that over time school burnout spills over to other life domains.[3,20] Generalization of burnout has been shown also in clinical settings, and it has been suggested that in the long run, burnout may overlap with depression influencing nearly all life domains.[21]

Although it has been shown that student-athletes demonstrate sport and school burnout symptoms already in the beginning of upper secondary school,[1] the co-development of sport and school burnout in adolescent student-athletes has not been yet investigated. It has been shown that sport and school burnouts are context-dependent phenomena, that is, they are associated but separate concepts.[1] Although both concepts are stress-related, they refer to different contexts of stress (ie, in sport burnout, the context of stress is sport, and in school burnout, the context of stress is school). It is possible that among student-athletes, school burnout may impact the development of sport burnout and sport burnout may impact the development of school burnout. This reasoning stems from cognitive-affective model of stress and burnout, which posits that when situational demands exceed the available resources, athlete's prolonged stress may lead to burnout associated with loss of interest in nearly all activities used to be enjoyable.[14] Burnout symptoms in one domain may, therefore, trigger burnout symptoms also in the other domain. For example, experiencing exhaustion (ie, chronic fatigue) in school may lead to less energy available for sport and, thus, generalize to sport-related exhaustion. Moreover, feeling inadequate as a student may spread to feelings of inadequacy also as an athlete, as across time one's overall self-esteem, defined as the overall evaluation of one's value as a person,[22] may deteriorate after experiencing failures. Furthermore, having cynical and distant attitude toward one domain (eg, sport) may over time develop into cynical attitude also toward the other domain (eg, school) as one, as a consequence of prolonged stress, loses interest in nearly all activities.[14] Furthermore, in the case of student-athletes, it is possible that one domain, sport or school, may be initially dominant in burnout symptoms, which then spills over to the other domain, but not the other way around. In this case, sport burnout symptoms, for example, could be merely result of being burned out in school. Consequently, treating symptoms of burnout in sport context may not have an effect because the source of stress is misplaced, which may then result into more serious conditions, such as depression, which has been shown to result from prolonged burnout.[3] The information about direction of sport and school burnout is particularly important for sport policy makers, and has practical implications for coaching and healthcare staff to enable early detection and prevention of burnout in dual-career athletes. The first aim of this study was, therefore, to investigate the co-developmental dynamic of sport and school burnout in student-athletes during the first year of upper secondary school.

1.2 | Achievement goals as predictors of sport and school burnout

From a social cognitive perspective, individuals' achievement goals are crucial determinants of achievement behavior and may, therefore, provide a basis for understanding the development of burnout.[23] Achievement goals consist of two goal orientations, *mastery* and *performance*[6] (also labeled as *task* and *ego*[24]) which act as criteria by which individual assesses success in achievement context. Mastery-oriented individuals are primarily motivated by improvement and personal mastery. Performance orientation takes place when individual actions are mainly motivated by demonstrating normative competence, such as superiority or winning. It has been shown that athletes who are mastery-oriented are more likely to demonstrate adaptive achievement behaviors, such as persisting in the face of failure and showing more positive emotions than those who are performance oriented.[7] Furthermore, performance-oriented athletes may be more prone to burnout than mastery-oriented athletes, because their self-worth might be dependent on constantly demonstrating

one's ability.[23] Unsatisfactory performance may thus result in perceiving competitive situations as threatening, which then leads to chronic stress and burnout symptoms. Indeed, Lemyere and colleagues[23] showed that among adult elite athletes, a "maladaptive" profile consisting of high performance orientation, performance-involving climate, low mastery orientation and mastery-involving climate was associated with sport burnout. Similarly, Isoard-Gautheaur and others[25] found that among adolescent elite athletes, mastery approach goals were negatively related to sport devaluation and performance approach goals were positively related to emotional and physical exhaustion.

Achievement goals have been also associated with school burnout.[8,26] Two person-oriented studies conducted among Finnish secondary and upper secondary school students showed that mastery-oriented students reported various sides of subjective well-being and low level of cynicism and inadequacy.[8,26] In turn, performance-oriented students were more likely to show symptoms of school-related exhaustion, cynicism, and inadequacy than their mastery-seeking peers.[8,26] It is possible that among student-athletes, the goals interact between the two domains, that is, school and sport. It has been previously shown that, among student-athletes, high success expectations in one domain (eg, sport) are negatively associated with sport burnout, but positively associated with burnout in another domain (in this case, school).[1] Although success expectations differ from achievement goals in such that they do not investigate athlete' s achievement motivation but more so how athlete expects to succeed on a certain domain, they still capture athlete's motivational drive toward one domain or another. For example, in the case of achievement goals, it is possible that sport mastery-oriented or sport performance-oriented individual is passionate about sport and wants to invest time and energy on that particular domain (for goals of personal mastery or winning others), whereas school aside is seen as compulsory or entrapment. Therefore, the more goal-oriented individual is in one domain, the more she/he might like to invest in this particular domain, but at the same time, the more "burden" the *other* domain becomes, resulting in burnout symptoms. Indeed, previous research has shown that dual-career athletes often experience tensions and goal conflicts between their passion for sport and time they need to spend on school which they recognize as important for their vocational future.[27] However, the role of achievement goals on sport and school burnout has not yet been investigated. Consequently, the second aim of the study was to investigate the role of sport- and school-related achievement goals in the development of sport and school burnout.

1.3 | The present study

The purpose of the present study was to investigate the co-developmental dynamic of sport and school burnout in student-athletes across the first year of upper secondary school, and to further examine how achievement goals in sport and school predict the development of sport and school burnout. With autoregressive paths, we aimed to predict changes in variables and, thus, establish directionality. The following research questions were investigated:

1. How does sport and school burnout, that is, sport- and school-related exhaustion, cynicism, and inadequacy, co-evolve across the first year of upper secondary school among student-athletes? In line with the previous findings,[12,13] it was expected that sport burnout at the beginning of the school year predicts sport burnout at the end of the school year (hypothesis 1). It was further hypothesized that school burnout at the beginning of the first school year predicts school burnout at the end of the school year (hypothesis 2).[15,19] Because previous studies have shown that burnout may spill over from one domain to another,[3,20] it was expected that school burnout at the beginning of the first school year predicts sport burnout at the end of the school year (hypothesis 3) and sport burnout at the beginning of the first school year predicts school burnout at the end of the school year (hypothesis 4).
2. To what extent do achievement goals in sport and school predict sport and school burnout at the beginning and end of the first school year? Based on the previous research,[23,25] sport mastery orientation was expected to negatively predict sport burnout (hypothesis 5) and sport performance orientation to positively predict sport burnout (hypothesis 6) at both T1 and T2. It was further hypothesized, in line with previous findings,[8,26] that school mastery orientation would negatively predict school burnout (hypothesis 7) and school performance orientation would positively predict school burnout (hypothesis 8) at T1 and T2. Finally, based on the findings of the cross-domain relationship between burnout and success expectations,[1] it was hypothesized that school mastery and school performance orientation would predict sport burnout (hypotheses 9 and 10, respectively), and sport mastery and sport performance orientation would predict school burnout (hypotheses 11 and 12, respectively).

2 | METHOD

2.1 | Participants and procedures

The present study is part of the longitudinal Finnish Dual Career project, in which talented student-athletes are followed throughout upper secondary sport school.[9] Ethical approval for the study was obtained from the ethics committee of the relevant university.

The sample consisted of 391 Finnish-speaking student-athletes (51% females) from six upper secondary sport schools, aged 15-16 ($M = 16$, SD = 0.17). In Finland, there are currently 13 upper secondary sport schools, which provide structural support for talented athletes to combine upper secondary school education with an athletic career. The selected schools are linked to the largest elite development centers and were contacted through the national network of sports academies. The six schools (two from Central, two from Southern, and two from Northern Finland) are also geographical representative of the country. As the schooling system in Finland is very homogeneous and monitored, six schools were considered adequate to represent Finnish upper secondary sport schools. Admission to upper secondary sport schools is competitive, and in addition to demonstrating academic ability evident by secondary school reports, adolescents must demonstrate high potential in their sport. Prior to data collection, the participants signed informed consent as the indication of their voluntary participation in the study. In Finland, parental-informed consent is not required for participants of over 15 years of age. All incoming athletes agreed to participate in the study. The participants completed a battery of questionnaires during class time at the beginning of their first year in upper secondary sport school (T1) and again, six months later (T2). At T2, 18 participants had dropped out, which resulted in 373 student-athletes (52% females). Fifty percent of the participants practiced individual sports and 50% team sports, and they had been competing at least in the regional level for at least 7 years, on average (SD = 2.41). The participants' Grade Point Average (GPA; possible range from 4 to 10) was 8.85, (SD = 0.62), and 68% of the participants expected to obtain a university Master's degree.

2.2 | Measurements

2.2.1 | Sport burnout

Sport burnout was investigated using the Sport Burnout Inventory-Dual Career Form (SpBI-DC).[11] The SpBI-DC is a modified version of the School Burnout Inventory (SBI)[17,18] and can be considered optimal for examining sport burnout in a dual career context. The scale consists of 10 items, of which 4 measures sport-related exhaustion (eg, *I often sleep poorly because of matters related to my sport)*, 3 measures cynicism toward the meaning of one's sport (eg, *Sport doesn't interest me anymore*), and 3 measures feelings of inadequacy as an athlete (eg, *I used to achieve more in my sport)*. All items were rated on a 5-point Likert scale (1 = *completely disagree*; 5 = *completely agree)*. Mean scores for each subscale were created. The Cronbach alpha reliabilities for the three subscales were 0.74, 0.80, and 0.78 in T1, and 0.77, 0.88, and 0.81 in T2, respectively.

2.2.2 | School burnout

School burnout was measured using the SBI.[17,18] The scale consists of 10 items, of which 4 measure exhaustion at school (eg *I often sleep poorly because of matters related to my schoolwork*), 3 measure cynicism toward the meaning of school (eg, *School doesn't interest me anymore*) and 3 measuring feelings of inadequacy as a student (eg, *I used to achieve more in school*). All items were rated on a 5-point Likert scale (1 = *completely disagree*; 5 = *completely agree).* Mean scores for each subscale were created. The Cronbach alpha reliabilities for the subscales were in 0.82, 0.80, and 0.78 in T1, and 0.83, 0.83, and 0.82, in T2, respectively.

2.2.3 | Achievement goals in sport

Achievement goals in sport were measured using the Perception of Success Questionnaire.[24] The scale consists of 10 questions, out of which six measure mastery orientation in sport (eg, *When playing sport, I feel most successful when I try hard*) and four measure performance orientation in sport (eg, *When playing sport, I feel most successful when I beat other people*). The Cronbach alpha reliability coefficient for mastery orientation subscale was 0.74 and for performance orientation subscale 0.86.

2.2.4 | Achievement goals in school

To measure achievement goals in school, the Perception of Success Questionnaire[24] was modified into school context. The scale consists of 10 questions, six of which measure mastery orientation in school (eg, *When studying, I feel most successful when I really improve*) and four performance orientation in school (eg, *When studying, I feel most successful when I get better grades than others*). The Cronbach alpha reliability coefficient for mastery orientation subscale was 0.88 and for the performance orientation subscale 0.91.

2.3 | Analysis strategy

The statistical analyses were carried out with M-plus package.[28] The full-information maximum likelihood (MLR) procedure was used to estimate the parameters of the models. A missing-data method was applied, which uses all available data to estimate the model without inputting data. Initial data screening revealed no outliers (ie, there were no values outside the distribution, and all values were within the range of ∓3 standard deviations from the mean).

The analyses were carried out according to the following steps: First, measurement models were specified according

to the theoretical background of sport and school burnout (separate models for exhaustion, cynicism, and inadequacy). Also measurement models were specified for achievement goals (simultaneous estimation for school mastery, school performance, sport mastery, and sport performance). The goodness-of-fit was assessed using four indicators: (a) Chi-square test, (b) Bentler's comparative fit index (CFI), TLI (c) the Tucker-Lewis Index (TLI), (d) Root Mean Square Error of Approximation (RMSEA), and (e) Standardized Root Mean Square Residual (SRMR). Values above 0.95 for CFI and TLI and value below 0.06 for RMSEA and 0.08 for SRMR were considered to indicate a good fit between the hypothesized model and the observed data.[29]

Second, invariance of factor loadings, intercepts and residuals across time in burnout subscales was tested. The invariance was tested by estimating four models step by step. Model M1 was freely estimated model. In the model M2, the factor loadings were set equal across time, and in the model M3, the factor loadings and intercepts were set equal across time. In the model M4 factor loadings, intercepts and residual variances were set equal across time. Successive models were compared using the Satorra and

TABLE 1 Measurement models of sport and school burnout and achievement goals among student-athletes

Subscale	χ^2	*df*	*P*-value	RMSEA	CFI	TLI	SRMR	$\Delta\chi^2$	Δdf	*P*-value
Sport										
Exhaustion M1	36.23	15	.001	0.061	0.97	0.95	0.035	-	-	-
Exhaustion M2	48.18	18	<.001	0.065	0.96	0.94	0.049	12.26	3	.007[a]
Exhaustion M3	53.71	21	<.001	0.063	0.96	0.95	0.046	5.24	3	.155
Exhaustion M4	55.52	25	<.001	0.056	0.96	0.96	0.051	2.49	4	.647
Inadequacy M1	5.28	5	.383	0.012	1.0	1.0	0.021	-	-	-
Inadequacy M2	16.92	7	.018	0.060	0.984	0.965	0.043	12.89	2	.002[b]
Inadequacy M3	20.91	9	.013	0.058	0.980	0.967	0.038	3.89	2	.143
Inadequacy M4	22.39	12	.033	0.047	0.983	0.979	0.036	2.92	3	.404
Cynicism M1	3.70	5	.593	<0.001	1.0	1.0	0.015	-	-	-
Cynicism M2	5.52	7	.597	<0.001	1.0	1.0	0.028	2.24	2	.999
Cynicism M3	7.76	9	.559	<0.001	1.0	1.0	0.027	2.78	2	.249
Cynicism M4	13.89	12	.308	0.020	0.996	0.995	0.039	5.49	3	.139
School										
Exhaustion M1	39.37	15	<.001	0.064	0.977	0.957	0.034	-	-	-
Exhaustion M2	40.91	18	.002	0.057	0.979	0.967	0.037	1.40	3	.705
Exhaustion M3	42.37	21	.004	0.051	0.980	0.973	0.036	1.01	3	.800
Exhaustion M4	48.54	25	.003	0.049	0.978	0.975	0.042	6.30	4	.178
Inadequacy M1	13.47	5	.019	0.066	0.988	0.964	0.028	-	-	-
Inadequacy M2	15.43	7	.031	0.055	0.988	0.974	0.033	1.85	2	.397
Inadequacy M3	19.64	9	.020	0.055	0.985	0.975	0.034	4.21	2	.122
Inadequacy M4	20.28	12	.062	0.042	0.988	0.985	0.041	1.43	3	.697
Cynicism M1	4.14	5	.530	<0.001	1.0	1.0	0.014	-	-	-
Cynicism M2	6.34	7	.501	<0.001	1.0	1.0	0.023	2.29	2	.318
Cynicism M3	11.01	9	.275	0.024	0.997	0.995	0.030	5.42	2	.067
Cynicism M4	12.15	12	.433	0.006	1.0	1.0	0.029	1.52	3	.678
Goals M1	531.16	164	<.001	0.076	0.89	0.87	0.065			
Goals M2	546.66	172	<.001	0.075	0.88	0.87	0.079			
Goals M3	615.58	180	<.001	0.079	0.87	0.86	0.097			
Goals M4	662.63	190	<.001	0.080	0.85	0.85	0.181			

M1, Freely estimated model; M2, Factor loadings fixed equal; M3, Factor loadings and intercept fixed equal; M4, Factor loadings, intercept, and residuals fixed equal; Goals, Sport and school achievement goals.

The final three columns describe χ^2 differences between nested models.

[a]The power using the non-central χ^2- test was 0.73.

[b]The power using the non-central χ^2- test was 0.17.

Bentler-corrected chi-square difference test. If the difference test was shown to be significant, the amount of difference was evaluated by comparing the RMSEA values. A small RMSEA difference indicates that the invariance between the factors holds across time.[30] By using the method of MacCallum, Browne, and Cai,[30] the chi-square difference test value was compared to non-central chi-square distribution instead of usual chi-square distribution. The non-central value for chi-square distribution was calculated by allowing the increase in RMSEA values between time points to be 0.01 (from 0.05 to 0.06).[30] With these small differences in RMSEA values, we obtained the critical value for chi-square (χ^2) differences and the corresponding *P*-value. If the *P*-value was not statistically significant, the difference was small and we accepted the more stringent model (eg, invariance in factor loadings). In all these models, autocorrelations over time between the same items were allowed.[31]

Third, cross-lagged models for sport and school burnout were constructed separately for each burnout subscale. Fourth, performance and mastery goals (separately for school and sport domains) were included into the previous models as predictors of sport and school burnout dimensions at T1 and T2. In this context, the impact of common method variance on the results was tested by adding a latent factor including all the items measuring achievement goals and sport and school burnout to the model.[32,33]

3 | RESULTS

First, measurement models for sport and school burnout subscales (exhaustion, cynicism, and inadequacy) at T1 and T2 were constructed from the relevant items. Based on the criteria of Hu and Bentler,[29] all models demonstrated a good fit (see Table 1). Next, measurement model for achievement goals (sport mastery and performance goals and school mastery and performance goals within the same model) was investigated. As shown in Table 1, the fit of the model was not sufficient. Consequently, we also investigated sport and school achievement goals using exploratory factor analysis (EFA) to gain deeper understanding of the results. It has been suggested that in the case of poorly fitting models, instead of relying on extensive model modifications of the CFA, it may be better to carry out the analyses using EFA.[34] In EFA, theoretical hypotheses about the patterns between variables are not needed (ie, in EFA, factor loadings of measured variables to all factors are calculated). The results of EFA model (fit indices = χ^2 [164] = 494.33; $P < .01$; CFI = 0.898; TLI = 0.882; RMSEA = 0.072; SRMR = 0.070) showed that the standardized factors loadings for sport performance goals were between 0. 70 and 0.82 (the largest cross-loading −0.14) and for sport mastery goals between 0.43 and 0.73 (the largest cross-loading 0.04). In school performance goals, the standardized factors loadings were between 0.80 and

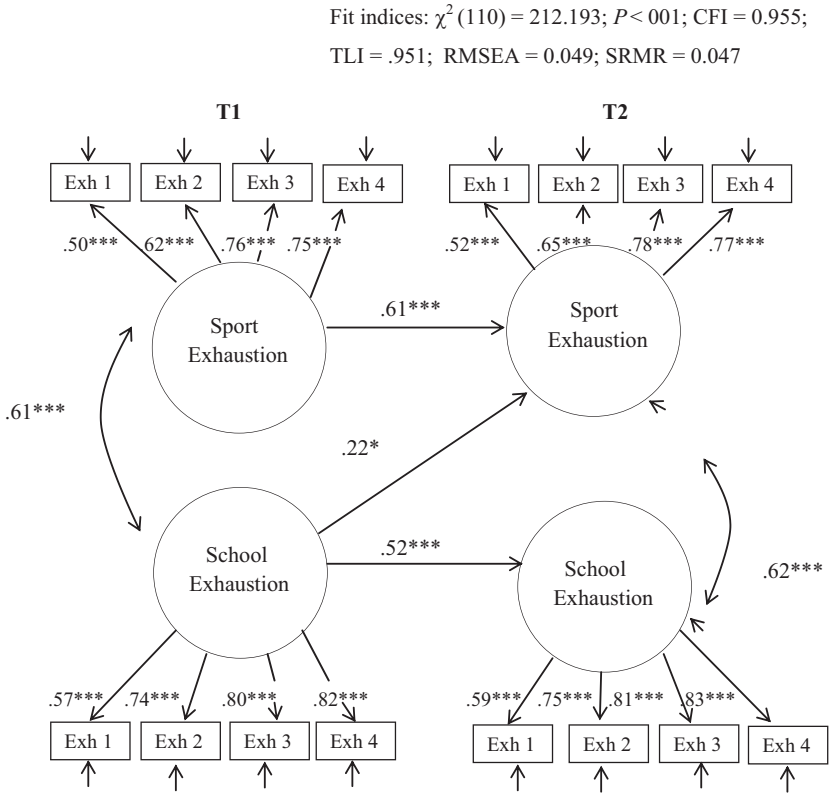

FIGURE 1 The developmental dynamic of sport and school exhaustion (standardized parameter estimates) at T1 (N = 391) and T2 (N = 373). Only the statistically significant regression coefficients are included. **P* < .05, ***P* < .01, ****P* <.001; T1, measuring time 1; T2, measuring time 2; Exh, exhaustion

0.89 (the largest cross-loading −0.14) and for school mastery goals 0.62 and 0.86 (the largest cross-loading 0.07). These results indicate that the theoretical structure of achievement goals fits well with the data although many small cross-loadings result poor fit in the confirmatory model. As the fit of the EFA model (RMSEA = 0.072) was nearly equal to the fit of the CFA model (RMSEA = 0.075) and the CFA model was considered more interpretable and in line with the theory of measurement modeling, we continued using the theoretical structure of achievement goals in the confirmatory factor analysis (CFA).

Second, invariance of factor loadings, intercepts, and residuals across time in sport and school burnout subscales was investigated. The fit indices of all tested successive models are presented in Table 1. As can be seen from the table, with those models with significant difference test the RMSEA differences were small (ie, from 0.05 to 0.06),[30] indicating that the model invariance holds in all burnout subscales.[30]

Third, the cross-lagged models were constructed separately for each subscale (sport and school exhaustion at T1 and T2; sport and school cynicism at T1 and T2; and sport and school inadequacy at T1 and T2, respectively). A model with sport and school exhaustion had a good fit (see Figure 1), similarly to the model with sport and school cynicism (χ^2 [56] = 75.541; P = .042; CFI = 0.987; TLI = 0.985; RMSEA = 0.030; SRMR = 0.038) and sport and school inadequacy (χ^2 [56] = 110.444; $P < 01$; CFI = 0.965; TLI = 0.959; RMSEA = 0.050; SRMR = 0.043). The results concerning exhaustion showed first that both sport exhaustion at and school exhaustion showed statistically significant stability from T1 to T2. Second, school exhaustion at T1 predicted sport exhaustion at T2 (see Figure 1 for parameter estimates): the higher the school exhaustion at T1, the higher the subsequent sport exhaustion at T2, after controlling for the level of sport exhaustion at T1. Sport exhaustion at T1, however, did not predict school exhaustion at T2 (standardized parameter estimate = 0.13, P = .07).

The results for sport and school cynicism showed that sport and school cynicism at T1 predicted cynicism in the same domain at T2 (standardized parameter estimates = 0.53, $P < .001$; 0.64, $P < .001$, respectively) but there were no statistically significant cross-lagged associations between the two domains (standardized parameter estimates = −0.02, P = .71; .05, P = .38, respectively). Similarly, sport and

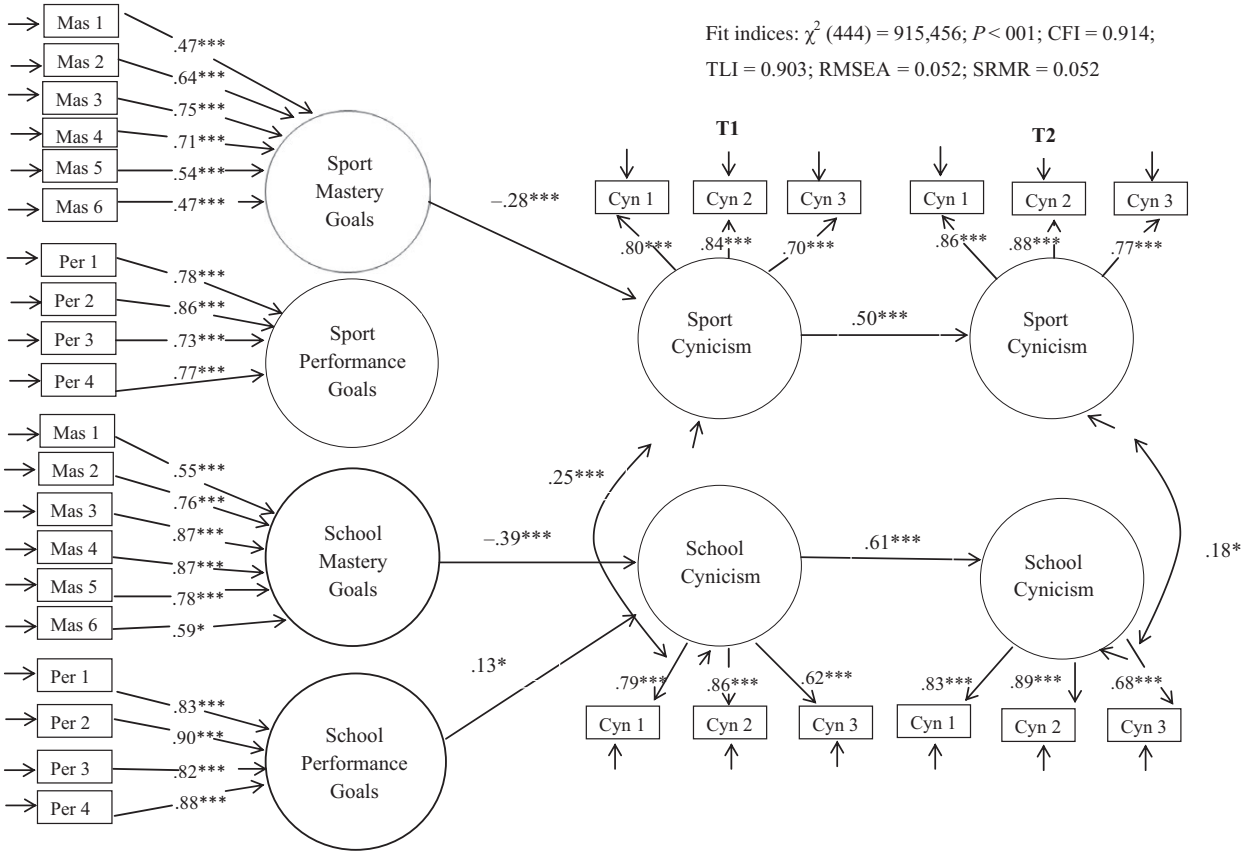

FIGURE 2 Sport and school achievement goals as predictors of sport and school cynicism (standardized parameter estimates) in T1 (N = 391) and T2 (N = 373). Only the statistically significant regression coefficients are included. *$P < .05$, **$P < .01$, ***$P < .001$; T1, measuring time 1; T2, measuring time 2; Mas, mastery goals; Per, performance goals; Cyn, cynicism

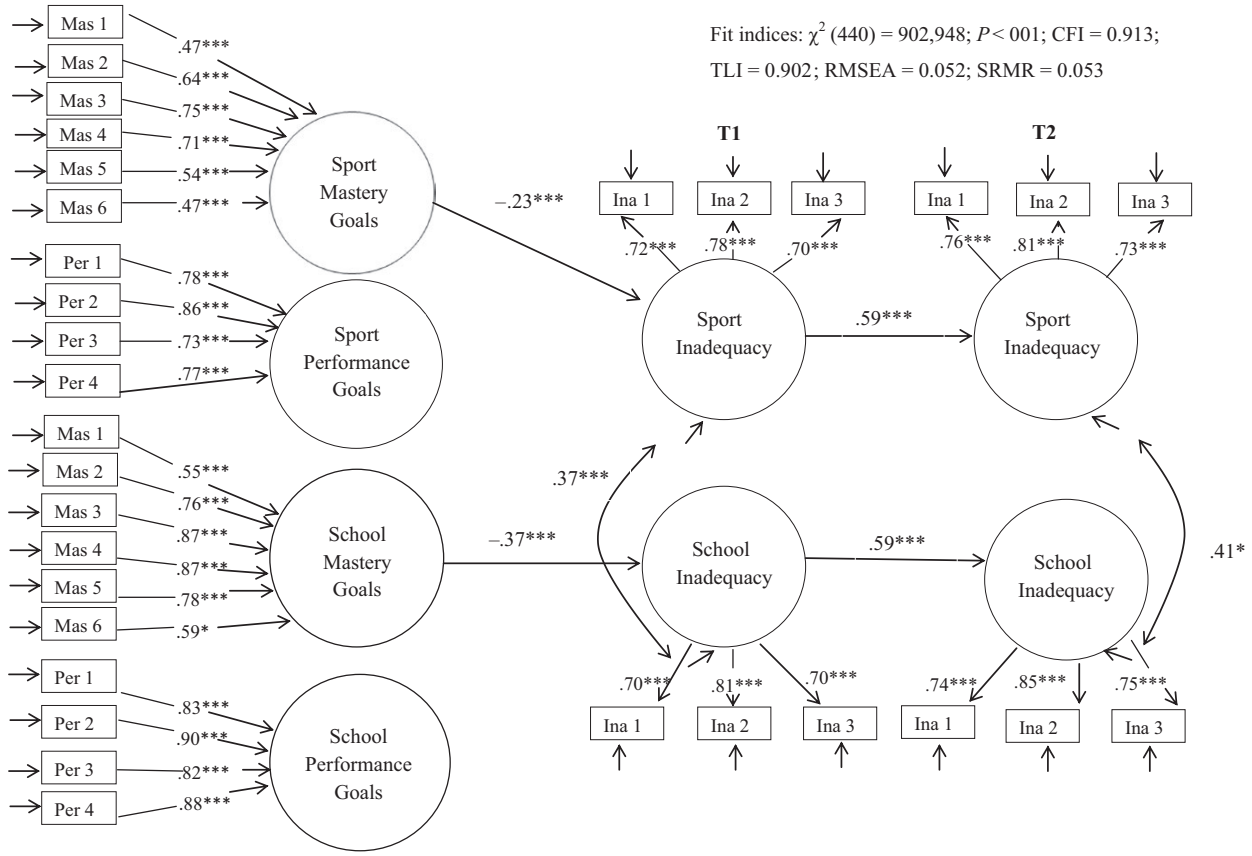

FIGURE 3 Sport and school achievement goals as predictors of sport and school inadequacy (standardized parameter estimates) in T1 (N = 391) and T2 (N = 373). Only the statistically significant regression coefficients are included. *$P < .05$, **$P < .01$, ***$P < .001$; T1, measuring time 1; T2, measuring time 2; Mas, mastery goals; Per, performance goals; Ina, Inadequacy

school inadequacy in T1 predicted inadequacy in the same domain in T2 (standardized parameter estimates = 0.58, $P < .001$; 0.59, $P < .001$, respectively) but no cross-lagged associations were found between the two domains (standardized parameter estimates = 0.06, $P = .40$; .07, $P = .23$, respectively).

Fourth, achievement goals in sport and school were included into the previous models as predictors of symptoms of sport and school burnout. Because goals on two different domains (sport and school) correlated with each other relatively strongly ($r^{mastery\ goals} = .49$, $P < .001$; $r^{performance\ goals} = .58$, $P < .001$), we used Cholesky decomposition to test the independent contribution of each subscale.[33] The results showed that sport mastery goals predicted negatively sport-related cynicism (see Figure 2) and sport-related inadequacy (see Figure 3) at T1, whereas school mastery goals predicted negatively school cynicism (see Figure 2) and school-related inadequacy (see Figure 3) at T1: the higher the level of the mastery goals on a particular domain, the lower the level of cynicism and inadequacy on that domain at T1. Besides these effects of mastery goals, school performance goals predicted positively school cynicism in T1 (see Figure 2): the higher the level of performance goals on the school domain athletes reported, the more cynicism they also reported in school at T1. No significant associations were found between achievement goals and sport and school exhaustion. All standardized parameter estimates are presented in Supplementary Table 1. Finally, a latent factor measuring possible bias do to the common method was added to the model. The indicators of the factor included all items measuring achievement goals and sport and school burnout. The results showed that only few of the items (four out from 20) loaded significantly on the common factor. Moreover, the loadings of the items varied from positive to negative. Consequently, no common variance related to method used in this study was found.[32,33]

4 | DISCUSSION

The purpose of this study was to investigate the co-developmental dynamic of sport and school burnout among adolescent student-athletes. Furthermore, the relationship between achievement goals and burnout development was investigated. The results showed that dimensions of sport and

school burnout, that is exhaustion, cynicism, and inadequacy, showed all substantial stability during the first year of upper secondary school. Furthermore, the level of school exhaustion at the beginning of upper secondary school predicted subsequent sport exhaustion at the end of the school year. The results showed further that mastery orientation was negatively associated with cynicism and feelings of inadequacy within the same domain and school performance orientation, in turn, was positively associated with school cynicism.

4.1 | Developmental dynamic of sport and school burnout

The first aim of the study was to examine how sport and school burnout would co-evolve across the first year of upper secondary school in student-athletes. As we expected (hypothesis 1), sport burnout at the beginning of school predicted sport burnout at the end of the first year of upper secondary school, and (hypothesis 2) school burnout in the beginning of upper secondary school predicted school burnout in the end of the school year. The findings are in line with previous research, which has shown that sport burnout[12,13] and school burnout[8,24] show stability over time. Furthermore, school exhaustion at the beginning of upper secondary school predicted sport exhaustion at the end of the first school year, as we expected (hypothesis 3). However, our hypothesis was only partially supported, as school-related cynicism and inadequacy did not predict similar symptoms on the sport domain. The pattern of results may be due to the fact that exhaustion is characterized as the initial and central part of burnout[35,36] and therefore the effect of exhaustion is likely to be evident first. Thus, it is possible that over time cynicism and inadequacy also become significant predictors of later similar symptoms of sport burnout. Interestingly, symptoms of sport burnout did not predict subsequent symptoms of school burnout (hypothesis 4). This finding suggests that during the first year of upper secondary school student-athletes may be particularly exhausted from school, which then spills over to sport. This may be due to the increasing study demands of upper secondary schools[15] as athletes may not have sufficient amount of time to rest and recover from school, and are therefore more exhausted also in sport. This information that symptoms of sport exhaustion may partly result from exhaustion of school is important for sport and upper secondary school policy makers, and also for coaches and parents, and should be taken into account in treatment and recovery to prevent student-athletes from burning out.

4.2 | Achievement goals as predictors of sport and school burnout

Our second aim was to examine how achievement goals would predict the development of sport and school burnout among student-athletes. As we expected (hypothesis 5), mastery orientation in sport was negatively associated with sport-related cynicism and inadequacy at the beginning of upper secondary school. This finding is in line with previous studies[7] suggesting that those who are motivated by personal growth and mastery are less likely to show sport-related cynicism or feelings of inadequacy than those who are not. Although no direct effect was found between mastery goals in sport and sport-related cynicism and inadequacy at the *end* of the school year, due to a high stability of the burnout subscales between the two measurement points, the effect is likely to carry over to the second measurement point via the first one. Unlike expected, mastery orientation in sport was not related to sport exhaustion, which in line with some of the past findings.[25] This is interesting as exhaustion has been shown to be the central part of sport burnout.[36,37] Recently, there have been arguments that exhaustion should be investigated separately from cynicism and inadequacy, as they do not measure the same construct.[10,36] Whereas exhaustion is a physical state resulting from overtaxing in a domain, cynicism and inadequacy are attitudes toward the domain. Hence, it is plausible that mastery goals, characterized by personal mastery and growth seeking would be negatively related to cynical attitude and feelings of inadequacy as an athlete, but not necessarily to exhaustion.

Unlike we expected, performance orientation was not associated with sport burnout symptoms (hypothesis 6). In previous studies, performance orientation in adolescent athletes has been associated with sport burnout symptoms,[23,27] although contradictory evidence also exists. Appleton, Hill, and Hall found among junior male-elite athletes (in a study that investigated the moderating role of achievement goals in perfectionism-burnout relationship) that neither mastery nor performance orientation predicted burnout.[38] One reason for contradicting findings could be differences among the samples, as some studies have been conducted with elite adult athletes[23] and some with elite junior athletes.[38] Our study was conducted with adolescent student-athletes from various competition levels (ie, not only elite level).

In school context, similarly, mastery orientation was negatively associated with school-related cynicism and inadequacy at the beginning of upper secondary school. This was in line with our hypothesis (7) and with the previous studies[8,26] indicating that those who are motivated by personal mastery may be less likely to experience symptoms of school-related cynicism or inadequacy as a student. However, similarly to sport domain and previous findings on school domain,[8,26] school mastery goals were not related to school-related exhaustion, making room for ongoing discussion whether exhaustion should be investigated separately from cynicism and inadequacy.[10,36] As anticipated (hypothesis 8) performance orientation in school was associated with school-related cynicism. This finding is in line with the previous findings,[8,26] suggesting

that having school achievement goals based on winning others may result in symptoms of cynicism toward school. This may be the case particularly if one is not performing as well as expected, as one's self-value, which is dependent on feeling superior to others, becomes threatened.[23] It might be interesting, consequently, to investigate whether student-athletes' school performance (ie, grade point average), might moderate the relationship between performance orientation and school burnout. However, unlike in the previous studies,[8,26] school performance goals were not related to school exhaustion or feelings of inadequacy as a student. One reason for this contradicting finding could be differences in the sample: Student-athletes are a specific population and may not be directly comparable to students. A second reason, which also applies to sport settings, could be due to differences in conceptualization. In the present study, achievement goals were investigated as a two-dimensional construct (mastery/performance), whereas research in both sport[25] and school[26] settings has investigated achievement goals more recently with 2×2 model (mastery approach/avoidance; performance-approach/avoidance) which suggest that motivation can be either appetitive (eg, mastery approach) or aversive (eg, mastery-avoidance).[6] In this model, perceived competence is believed to be a central characteristic differentiating approach goals from avoidance goals. The impact of achievement goals on sport and school burnout should be investigated in the future using the 2×2 model to have a more holistic view of the phenomenon.

5 | LIMITATIONS OF THE STUDY

The present study had several strengths. First, we were able to provide meaningful, novel knowledge about the simultaneous development of sport and school burnout symptoms among student-athletes using a longitudinal design. Second, the sample was large and the selected schools were located on geographically different sides of Finland. Third, using structural equation modeling (SEM), we were able to investigate latent variables instead of observed variables and thus account for measurement error. However, we also faced several limitations. First, we used adapted measures of achievement goals, which were not yet validated in the modified context. Second, we used self-reports of student-athletes and, thus, have only partial view of the phenomenon. Future studies should investigate the development of school and sport burnout by including, for example, reports from parents and coaches, and possibly also physiological burnout measures. Third, we did not have clinical or any other kind of cutoff values for sport and school burnout, making it hard to interpret what the scores actually mean. This problem has been recognized by burnout researchers,[10,35] and it is highly encouraged that in the future, cutoff scores for student-athletes' burnout would be created. It would be also interesting to investigate the relationship between burnout scores and, for example, real-world performance (eg, GPA, competition success) and motivation outcomes to gain greater understanding to the real-world meaning of burnout scores. Third, the time frame of the investigation was only 6 months and we had only two measurement points. By having only two measurement points, we were not able to separate between within- and between-person effect, possibly rendering bias for the cross-lagged and autoregressive effects.[39] Furthermore, another measurement occasion would allow tests of mediator effects, on the one hand, and growth curves of burnout measures, on the other. For future research, longer time frames and more measurement points are required to investigate the co-development of sport and school burnout across school years. Fourth, although the power to detect unequal factor loadings from T1 to T2 for sport exhaustion and cynicism were high, for inadequacy it was low and, consequently, one should be cautious about the findings concerning inadequacy subscale. It should be noted, however, that from a total of 28 tests only one demonstrated low power and, thus, the result may have also appeared randomly. Fifth, the study was conducted in Finland, and it is unknown how sport and school burnout co-evolves in other countries where systems regarding schooling and organized sports differ. Consequently, the topic should be investigated also in other cultural contexts. Finally, although the statistical methods in the present study were carefully chosen, we cannot conclude causality for this type of study. For example, the participants were not randomly selected from all Finnish student-athletes (more so, they were members of certain schools) nor can we be sure that the relationships between the variables are not impacted by other variables.[40] This needs to be noted when interpreting the results.

6 | PERSPECTIVES

The present study contributed to the existing literature in three ways. First, we investigated the co-developmental dynamic of sport and school burnout among adolescent athletes using SEM and could therefore present a sophisticated description of the previously unexamined phenomenon. Second, we were able to show that exhaustion spills over from school to sport domain, which is of significant importance to policy makers of upper secondary schools, sport clubs, and coaches to prevent student-athletes from burning out. Third, we showed that among adolescent student-athletes, mastery goals may protect from sport- and school-related cynicism and inadequacy within the same domain. Furthermore, we showed that performance goals in school predicted cynicism toward school. As a practical implication, student-athletes could be motivated in sport and school by teachers and coaches using self-development and learning as a method.

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SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

How to cite this article: Sorkkila M, Aunola K, Salmela-Aro K, Tolvanen A, Ryba TV. The co-developmental dynamic of sport and school burnout among student-athletes: The role of achievement goals. *Scand J Med Sci Sports*. 2018;00:1–12. https://doi.org/10.1111/sms.13073