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The Role of Resilience in Student-Athletes' Sport and School Burnout and Dropout:

A Longitudinal Person-oriented Study

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The Role of Resilience in Student-Athletes' Sport and School Burnout and Dropout: A Longitudinal Person-oriented Study

Abstract

Although it has been shown that student-athletes who pursue upper secondary school alongside with an athletic career may be prone to sport and school burnout, the concrete life changes resulting from burning out, such as dropping out of sport or school, have not been investigated. Moreover, it is unknown why some student-athletes do *not* burn out. The purpose of the present study was to examine whether there are different kinds of profiles - based on the level and development of sport and school burnout symptoms across upper secondary school - that can be identified among student-athletes and how resilience and the likelihood of dropping out from sport or school differs between the profiles. The sample consisted of 491 (49 % females) Finnish student-athletes who filled in questionnaires four times during the three years of upper secondary school. The data was analyzed by using growth mixture modeling. Three burnout profiles were identified: 1) *Average* profile, 2) *Increased burnout* profile, and 3) *Non risk* profile. The profiles differed significantly in terms of student-athletes' resilience and the likelihood of dropping out, as those in the *Increased burnout* group symptoms were significantly less resilient and more likely to drop out from sport than those in the other two groups. Furthermore, those in the *Non risk* profile were more resilient than athletes in the other two groups. The results can be used in teaching student-athletes resilience-related skills which can prevent them from burning out and dropping out from sport and school.

Introduction

Upper secondary school may be particularly pressuring time for talented young athletes. At the same time as athletes often transit to adult sport, which may be one of the most challenging times in career,[1] young athletes face the increasing demands of upper secondary school.[2] Taken this account it is not surprising that some student-athletes show sport and school burnout symptoms, such as emotional and physiological exhaustion, cynicism, and feelings of inadequacy, already in the beginning of upper secondary school[3] and that the symptoms increase over time.[4,5] One potential consequence of student-athletes' burnout is dropping out of sport (i.e., quitting their athletic career) or school (i.e., quitting their education). Although previous research has shown that burned out students are four times more likely to dropout from upper secondary school than non-burned out students,[6] the relationship between burnout and drop out has not yet been investigated among student-athletes. Furthermore, to prevent burnout and dropout, information is needed why some student-athletes do *not* burn out. The aim of the present study was to investigate whether there are different kinds of profiles - based on the level and development of sport and school burnout symptoms across upper secondary sport school - that can be identified among student-athletes, and how resilience, that is, one's ability to adapt to transitions and setbacks encountered, is associated with the likelihood to show a certain profile. Furthermore, the extent to which different burnout profiles are associated with the likelihood to drop out from sport or school was examined.

Sport and School Burnout among Student-Athletes

Sport and school burnout have been defined as sport/school-related exhaustion (i.e., chronic fatigue due to overtaxing in sport/schoolwork), cynicism towards the meaning of sport/school (i.e., indifferent or distal attitude towards one's own sport/schoolwork), and

inadequacy as an athlete/student (i.e., feeling of not performing as well as one used to in sport/school).[7,8] Burnout has been suggested to develop as a consequence of chronic stress when the experienced demands (e.g., high training load) constantly exceed the available resources (e.g., social support).[9] This may be particularly evident for student-athletes who may have more demands than adolescents in general, as they strive for success in two domains.[5] The lives of student-athletes on the domains of sport and school are highly intertwined and one domain is likely to affect the other. Indeed, it has been shown that student-athletes' exhaustion in school spills over to sport.[4] Moreover, high success expectations in one domain have been shown to protect student-athletes from burnout symptoms in the same domain, but be positively related to burnout symptoms in the *other* domain.[3] Therefore, among student-athletes both within- and across-domain effects need to be accounted for.

Previously, burnout has been mainly investigated by using a variable oriented approach (i.e., assuming that population is homogeneous with respect to the studied phenomenon),[10] although it has been argued that it might be more informative to examine burnout with a person oriented approach (i.e., assuming that population is heterogeneous with respect to the studied phenomenon).[10] Because individuals have different processes of functioning, it is possible that there are different subgroups of individuals with similar symptomology to each other, but different from the individuals in other groups. Indeed, it has been shown that based on the level and change of sport and school burnout symptoms there are different profiles of student-athletes already in the beginning of upper secondary schools,[3] and these profiles may become more overlapped during the first school year.[5] However, it has been argued that since burnout is a condition that evolves over time, longer time frames and measuring points are needed to investigate the phenomenon.[4,5]

The Role of Resilience

Although it has been shown that a relatively large proportion of student-athletes suffer from sport and school burnout symptoms during the first school year, there are also student-athletes who cope with the demands of dual career well and don't show symptoms of burnout.[3,5] It has been suggested that one factor differentiating athletes who get burned out from those who do not is psychological resilience,[5,11] that is, individual's ability to bounce back or recover from stress.[12] Resilience can appear in response to a vast range of adversities, ranging from mild daily hassles to major traumatic events, and it may help to explain why some individuals can endure - or even blossom on - the pressure experienced in their lives.[13] As a concept, resilience differs from coping and recovery. Whereas resilience influences the appraisal of an event (e.g., viewing a stressful situation as an opportunity for development), coping refers to the strategies used *after* the appraisal (e.g., using positive self-talk).[13] Recovery, in turn, can be conceptualized as a temporary period of lower levels of functioning followed by a gradual restoration to normal levels of functioning, whereas a resilient individual is able to maintain the normal level of functioning when facing adversities.[13] Resilience has been generally considered a relatively stable personality trait, that is, constellation of characteristics such as general resourcefulness and flexibility of functioning that enable individuals to adapt to the encountered situations.[13,14] However, there is also some evidence that resilience can change over time, suggesting that it is rather a dynamic process.[15,16] The view that resilience can be taught and learned has lead researchers to develop resilience-based programs to treat, for example, depression.[17] These programs aim at increasing one's personal resources and psychological capital through self-awareness, optimism, and self-efficacy.[13,17]

In previous literature, resilience has been positively associated with optimism, active coping, and positive reframing and negatively with pessimism, self-blame, anxiety, and depression.[11] So far, however, the role of resilience in student-athletes' wellbeing has not been investigated. A recent mixed methods study of student-athletes' burnout showed that that the interviewed athletes at burnout risk described being less resilient in their daily lives than those who were not at risk for burnout.[5] Nevertheless, in order to generalize the results into a wider population, quantitative confirmation of the results is needed. Consequently, the aim of the present study was to investigate whether there are different kinds of profiles - based on the level and development of sport and school burnout symptoms across upper secondary school - that can be identified among student-athletes, and how resilience is associated with the likelihood to show a certain profile. To what extent different burnout profiles would predict the likelihood to drop out from sport or school was also investigated.

Method

Participants and Procedures

The present study is part of the ongoing Finnish Longitudinal Dual Career Study which focuses on student-athletes in upper secondary sport schools.[x] There are currently 13 upper secondary sport schools in Finland, which enable talented athletes to combine their athletic career with upper secondary school education. Upper secondary school in Finland lasts for 3 years, on average, after which the students can apply for higher education (e.g., University). Admission to upper secondary sport schools is highly competitive, and in addition to demonstrating high potential in their sport, student-athletes must have above average grades in school. Ethical approval for the research was received from the ethics committee of the relevant university. Prior to data collection, the participants signed an informed consent to demonstrate their voluntary participation in the study.

The study began in Autumn 2015, during which the sample consisted of 391 first year student-athletes (51% females) from six different upper secondary sport schools in Finland (two from Central, two from Southern, and two from Northern Finland), with an average age of 16 (*SD* = 0.17). Fifty percent of the participants practiced team sports (e.g., football, ice hockey) and 50% individual sports (e.g., gymnastics, skiing). The athletes had been competing at least in the regional level for 7 years, on average (*SD* = 2.41). Before Time 2, one more school from Southern Finland expressed interest to participate in the national longitudinal study and was included in all subsequent waves of data collection. That is, a total of seven upper secondary sport schools participated in the study from T2 (*N* = 491; 49 % females) onwards. The participants completed a battery of questionnaires during class hours four times: at the beginning of their first year in upper secondary sport school (T1); six months later at the end of the first school year (T2); one year later at the end of the second school year (T3); and, finally, six months later in the beginning of the third school year (T4). The reason for selecting these measuring times was that the first year of upper secondary school is the transition year during which many developmental changes are likely to take place (e.g., increased burnout due to increased demands of the transition).[1,4] Consequently, burnout was measured twice during the first school year. After the first year, however, we did not want to wear the student-athletes out with demands related to data collection, and not too many changes were expected to take place during the second year.[1] Consequently, the third measuring time was only at the end of the second school year. The fourth measuring time was planned for the autumn of the third year due to practical reasons: the students in Finland have matriculation exams in the spring of the third year and therefore, it would not have been possible to collect data during that time.

School and sport burnout symptoms were measured at each measurement point, whereas resilience and dropout from school and sport were assessed at T4.

Measurements

Sport burnout. Sport burnout was measured by using the Sport Burnout Inventory - Dual Career Form (SpBI-DC).[8] The SpBI-DC is a modified version of the School Burnout Inventory (SBI)[9] and it has been developed to investigate sport burnout among student-athletes (i.e., the two scales have matching items). The scale consists of 10 items, out of which 4 measures sport-related exhaustion (e.g., *I often sleep poorly because of matters related to my sport)*, 3 measures cynicism towards the meaning of one's sport (e.g., *Sport doesn't interest me anymore*), and 3 measures feelings of inadequacy as an athlete (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)* and the overall SpBI-DC score was used as an indicator of sport burnout. The Cronbach alpha reliability for the overall scale in the present sample was 0.85 at T1, .87 at T2, .87 at T3, and .89 at T4.

School burnout. School burnout was measured using the SBI.[7] The scale consists of 10 items, out of which 4 measure exhaustion at school (e.g., *I often sleep poorly because of matters related to my schoolwork*), 3 measure cynicism towards the meaning of school (e.g., *School doesn't interest me anymore*) and 3 measuring feelings of inadequacy as a student (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)* and the overall SBI-score was used as an indicator of school burnout. The Cronbach alpha reliability coefficient for the overall scale in the present sample was 0.88 at T1, .89 at T2, .89 at T3, and .89 at T4.

Resilience. Resilience was measured at T4 by using the Brief Resilience Scale.[12] The scale consists of five items which measure the ability to recover after stress (e.g., *I tend to bounce back quickly after hard times*) which are rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). The Cronbach alpha reliability for the scale was .82.

Dropout. Sport dropout was assessed at T4 by asking the participants: *Are you still participating in competitive sports?* Participants answered to the question either *yes (value 1)* or *no (value 0)*. Similarly, school dropout was assessed by asking the participants: *Are you still continuing upper secondary school education?* to which the participants answered either *yes (1)* or *no (0)*. It needs to be noted, that sport and school dropout at T4 includes also those who dropped out earlier at T2 or T3 (i.e., dropout at T4 assembles all dropouts).

Analysis strategy

The statistical analyses were carried out with M-plus package.[18] The full-information maximum likelihood (MLR) procedure was used to estimate the parameters of the models. By applying a missing-data method, all available data was used to estimate the model without inputting data.

As preliminary analyses, the missing data was first examined by investigating whether the values were 'missing completely at random' (MCAR-test) or whether the missing information was associated with burnout on some measuring occasion. Second, in order to see how strong the stability of burnout would be between the measurement points within and across domains, the correlation structure between all burnout occasions was examined. If the stability was strong, this should be accounted for when specifying the mixture model. Third, the factorial invariance of school and sport burnout measures across time were investigated by estimating four successive models M1 – M4 and comparing the fit of the models. In M1, the factor loadings, intercepts, and residual variances of observed variables across time were all freely estimated. In M2, factor loadings were set equal across time. In M3, factor loadings and intercepts of observed variables were set equal across time, and in M4 factor loadings, intercepts and residual variances of the observed variables were set equal across time. The model fit were evaluated using the Root Mean Square Error of Approximation (RMSEA), Bentler's comparative fit index (CFI), the Tucker-Lewis Index (TLI) and the Standardized

Root Mean Square Residual (SRMR). For reasonable well fitted model the value of RMSEA is lower than .06, the values of CFI and TLI near to .95 and the value of SRMR lower than .09.[19] Because the chi-square difference test is overly sensitive to reject the more constraint model, we used the change in RMSEA, CFI and SRMR as an indicator of non-invariance when comparing nested models.[20] When testing invariance of factor loadings, a decrease lower than .010 in CFI, increase lower than .015 in RMSEA and increase lower than .030 in SRMR would indicate invariance.[20] Fourth, to examine whether burnout in sport and school measure different constructs (i.e., have unique variance) instead of a more generalized burnout, the correlations between the latent school and sport burnout factors across T1 to T4 were investigated.

To answer the actual research questions, the following analyses were carried out. First, a multivariate growth model for school and sport burnout was estimated to find out whether linear or non-linear model would best describe the data at the level of the whole sample.[21] In non-linear growth model, the slope factor loadings were freely estimated (0, *, *, 1), allowing the estimation of any shape of growth evident in the data (i.e., a free slope factor estimation). Second, growth mixture modeling (GMM) was applied to find out whether different burnout profiles among student-athletes can be identified. The model was specified by allowing the latent profile groups differ according to the mean values and the covariance structure of initial levels and slopes of school and sports burnout. As suggested by Ram and Grimm (2009),[21] also the shape of slope was allowed to vary between groups. To choose the best-fitting model, the following statistical criteria were used: the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the Vuong-Lo-Mendell-Rubin likelihood ratio (VLMR), the Lo-Mendell-Rubin adjusted likelihood ratio (LMR), the bootstrap likelihood ratio (BLRT), and the entropy value were all used. The model with the lowest AIC and BIC values was considered to be a better fit to the data, while the significant *p*-values

obtained for the VLMR, the LMR, and the 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, and the larger the value and the closer it is to one, the less classification errors there are in the model. When determining the number of latent classes, the BLRT and the BIC tests were selected as the most reliable criteria, as recommended by Tolvanen (2007)[22] and Nylund, Asparauhov, and Muthen (2007).[23] Also, average latent class posterior probabilities (AvePP) were inspected to determine the distinctiveness of the latent classes. In addition to the statistical criteria, theoretical interpretations of the classes and the class sizes were taken into account when choosing the final model.

Second, it was examined how resilience differed across burnout profiles using auxiliary measurement-error-weighted- method (BCH)[24] as recommended by Asparouhov and Muthén.[25] Third, the probability of sport and school dropout in each burnout profiles was investigated using categorical distal outcome (DCAT)-method,[26] in line with the recommendations of Asparouhov and Muthén.[25] In auxiliary analysis, differences between latent profile groups in some external variables under interest are investigated so that these external variables do not affect the individuals' probabilities to belong on the latent profile groups. If the external variables are included into the mixture model, they effect the formation of latent profiles. Consequently, to test profile differences in external variables, it may be more appropriate to use auxiliary analyses.[26] Finally, effect sizes for external variables were calculated by dividing the difference of mean values in the groups by standard deviation of the whole data.

Results

The preliminary analyses revealed that at T1, 20.4% of the data was missing for both sport and school burnout. However, one school was added to the data at T2, which explains at

least partly the amount of missing cases at T1. At T2, 9.2% was missing for school burnout, and 8.8% for sport burnout, respectively. At T3, 11.4% was missing from school burnout, and 15.3% from sport burnout, respectively. At T4, 26.9% was missing from school burnout, and 34.6% from sport burnout. MCAR-test showed that the data was missing completely at random (χ^2 (944) = 823,29, p = 1.00). Inspection of the correlation structure revealed that the correlations were stable across time (i.e., a particular correlation on one occasion was similar to the respective correlations on other occasions; see Table 1).

Next, the factorial invariance of school and sport burnout across time was examined. The initial unconstrained model where factor loadings, intercepts and residual variances of school and sport burnout subscales were freely estimated, showed poor fit ($\chi^2(224) = 1758.99, p < .001$, RMSEA=.12, CFI=.70, TLI=.63, SRMR=.10). Based on the examination of residual correlations, we decided to add specific factors for each burnout subscale to capture individual level on particular subscale across time. The specific factors were not allowed to correlate with other factors in the model. After this specification, the fit of the unconstrained model was good (see model M1 Supplementary Table 1). Then, invariance of factor loadings across time was tested by setting the factor loadings equal across time (model M2). Only slight decrease in the model fit was found (Δ CFI=.007, Δ RMSEA=.001 and Δ SRMR=.008), providing support for the equality of factor loadings across time. In the model M3, also the intercepts of observed variables were set equal across time. Compared to model M2, the decrease in the model fit was again small (Δ CFI=.005, Δ RMSEA=.001 and Δ SRMR=.002), providing support also for the equality of intercepts. In the last model M4, equality constrains for residual variances of observed variables were added. Changes in the model fit were again small, except in CFI which value decreased slightly more than Chen (2007)[20] recommended, Δ CFI=.012, Δ RMSEA=.003 and Δ SRMR=.011, and, consequently, the equality of residual variances were also concluded to hold. Standardized factor loadings

in M4 varied between .55 - .94 (see Supplementary Table 2). Standardized factor loadings for specific factors capturing the individual variation in the levels of different subscales varied between .35 - .61 (see Supplementary Table 3). As final part of the preliminary analyses, the correlations between latent sport and school burnout factors across the four measuring times were examined. The results showed that the correlation between sport and school burnout factors at T1, T2, T3, and T4 were .41, .47, .53, and .39 (all p <.001), respectively, indicating that although school and sport burnout are positively associated, they are clearly separate constructs.

The GMM analyses were started by conducting a multivariate growth model to the whole data. Because a linear growth model showed a poor fit ($\chi^2(22) = 129.07, p < .001, RMSEA = .10, CFI = .92, TLI = .90, SRMR = .038$), a non-linear growth model was estimated ($\chi^2(16) = 26.53, p = .047, RMSEA = .037, CFI = .99, TLI = .99, SRMR = .03$). Then, a non-linear GMM was applied to the data. As initial analyses showed that the variances of the slope components were not statistically significant, these variances were fixed to zero in the final models[21] in order to estimate a more parsimonious model.[21] The results of GMM showed that the three group solution fit the data best (see Table 2).

The largest profile (60%) was characterized by a flat form of both school and sport burnout, that is, an average amount of school and sport burnout symptoms but no change in them across time (see Figure 1). This profile was labelled as *the Average* group. The second largest profile (32%) was characterized by a quadratic developmental trend, that is, an increase of both sport and school burnout symptoms until T3, after which the amount of symptoms stabilized. The group was labelled as *Increased burnout*. The smallest group (8%) was characterized by a flat form with a low level of burnout symptoms, that is, a low and stable level of sport and school burnout symptoms across time. The group was labelled as

Non risk group. The found three groups were clearly distinct, as the AvePP for most likely latent class memberships were high (.90,.85, and .89, respectively).

Next, group differences in resilience were examined. The overall test demonstrated statistically significant profile differences ($\chi^2(2) = 75.96, p < .001$). Furthermore, all of the groups differed significantly in the pairwise comparisons ($p < .005$): the mean value of resilience was the lowest in the *Increased burnout* profile and highest in the *Non-risk* profile (M^1 =3.12, *s.e.* = .07, M^2 = 3.83, *s.e.* =.05, M^3 = 4.21, *s.e.* = .12). The effect size was 1.14 (i.e., indicating a large effect)[27] when comparing the difference between *Increased burnout* and *Average* group, 1.75 (i.e., indicating a large effect)[27] when comparing the *Non risk* group and *Increased burnout* group, and, finally, 0.61 (i.e., indicating a medium effect)[27] when comparing the *Non risk* group and *Average* group. These results indicate that the profiles clearly differed in terms in resilience.[27]

Finally, the probability of school and sport dropout across the profiles was examined. Regarding sport dropout (N = 51; 13.4% of the total sample), the overall test was significant ($\chi^2(2) = 11.04, p = .004$). Pairwise comparisons demonstrated that those who showed the *Increase burnout* profile were more likely to drop out from sport (.27) than those in the other two profiles (.06, .06). The profiles did not differ in relation to school dropout, which may partly be explained due to small amount of school drop outs (N = 4; 1% of the total sample).

Discussion

The purpose of the present study was to examine what kind of burnout profiles, based on the level and development of sport and school burnout symptoms, can be identified among student-athletes across upper secondary school and how these profiles are associated with athletes' level of resilience, on the one hand, and the probability of dropping out from sport and school, on the other hand. Three burnout profiles were identified: 1) The *Average* profile (60 % of the student-athletes) characterized by a stable, medium level of sport and school

burnout symptoms across upper secondary school, 2) The *Increased burnout* profile (32 % of the student-athletes) characterized by school and sport burnout symptoms that increased significantly until the end of second school year, after which they stabilized towards the third school year, and 3) the *Non risk* profile (8 % of the student-athletes) characterized by a stable, low level of sport and school burnout symptoms. Overall, these findings suggest that majority of student-athletes have some, and relatively stable, burnout symptoms throughout upper secondary school. However, a third of all student-athletes showed an increase in their sport and school burnout symptoms. Furthermore, there was a group of student-athletes who had very little burnout symptoms throughout upper secondary school.

Previous studies conducted in school settings have shown that school burnout increases throughout upper secondary school.[28,29] Our findings suggest that among student-athletes there are different subpopulations with different developmental trajectories: whereas among some student-athletes symptoms of burnout may increase, among some others the symptoms remain relatively stable. Still among others, there are no burnout symptoms at all. This highlights the importance of using a person-oriented approach, as the both the levels and developmental paths of burnout symptoms may differ between individuals, which also needs to be acknowledged in prevention and treatment of student-athletes' burnout. Interestingly, the identified profiles were characterized by either *both* sport and school burnout symptoms or *neither*. Previous studies have shown that at the beginning of upper secondary school the profiles are somewhat distinct (i.e., profiles with only sport *or* school burnout symptoms).[3] This suggests that overtime burnout may not be any longer context specific but, instead, the contexts become overlapped and burnout becomes generalized (i.e., overall burnout).[4,5] This is supported by previous findings in both sport[9] and clinical settings,[30] which suggest that when burnout develops it starts to resemble depression and covers most life domains.

The second aim of the present study was to examine how student-athletes with different burnout profiles would differ according to their level of resilience. The results showed that the athletes characterized by the *Increased burnout* profile had the lowest level of resilience, followed by the *Average* group. Athletes in the *Non risk* group, in turn, reported the highest level of resilience. The calculated effect sizes showed, that the profiles clearly differed in terms of resilience (i.e., all effect sizes between the groups were either large or medium).[27] These findings are in line with the previous findings conducted in sport settings,[11,16] suggesting that the ability to bounce back after stressful events may protect from burning out. From practical point of view, further intervention studies are needed to shed more light to the nature of resilience as either a static trait[14] or a dynamic process.[15] Intervention studies could provide answers, first, how and *if* resilience can be learned, and second, whether resilience-related skills have effect of on wellbeing (e.g., whether it is more effective than basic stress-reduction from the environment). Nevertheless, since some evidence suggests that at least resilience-*related* skills, such as positive reframing and optimism, could be learned,[16,17] upper secondary schools may benefit from offering student-athletes workshops of meta-reflective strategies and positive appraisals. This could include, for example, cultivating gratitude, energy management, problem solving skills, positive reframing, and minimizing counterproductive beliefs and catastrophic thinking.[13,17] At the same time, since almost a third of student-athletes experience increasing burnout symptoms, upper secondary schools should also focus on basic stress-reduction from the environment (e.g., reducing competitive pressure; organizing more time for recovery) and not rely solely on teaching resilience-related skills which may not be useful for all individuals.

The final aim of the present study was to examine the associations of burnout profiles with the probability of dropping out from sport and school. The results showed that those characterized by *Increased burnout* profile were more likely to drop out from sport than those

in the other two profiles. This finding is in line with previous research conducted in sport settings showing that sport burnout predicts sport dropout.[31] However, the two profiles, the *Average* profile and *Non risk* profile, did not differ from each other in terms of the probability of dropping out. This indicates that having some burnout symptoms may not be a risk factor for dropping out, but instead it may be relatively normal in the lives of student-athletes. This raises up the importance of developing reliable and standardized cut-off scores for student-athletes' sport burnout, which could be used to evaluate the risk factors of burning out in real life. However, the findings of the present study can be already used to draw initial cut off scores as those showed *Increased burnout* profile were significantly more at dropping out from sport than those in the other two groups (i.e., burnout scores had practical real-life consequences).

The burnout profiles did not differ in terms of the probability of dropping out from school. This is likely to be explained by the fact that only four student-athletes (1 %) dropped out from school during the study period, whereas 51 student-athletes (13 %) dropped out from sport. Overall, it seems like student-athletes who are burned out and therefore unable to continue on both tracks (sport and school) choose to leave sport instead of school. This is interesting finding because previous literature has shown that although student-athletes consider education important, they tend to prioritize their athletic career.[32,33] Therefore, one could assume that student-athletes would be more willing to quit school than sports. However, in Finland very few athletes can professionalize in sports and, therefore, in this cultural context it may be more sensible to focus on school. It is also possible that those who are burned out may not be able to experience passion towards anything anymore,[30] and therefore, choose the most sensible domain.

Limitations of the study

This study had several limitations which need to be taken into account when interpreting the findings. First, resilience was measured at the end of upper secondary school, which raises questions about the temporal validity of this variable.[35] Resilience has been suggested to be a relatively stable characteristic,[13,14] and, therefore, the findings of the present study may bring nevertheless valuable information about the relationship between resilience and student-athletes' burnout, although no causality or implications of directionality can be drawn from the results. Since there has been, however, conceptual discrepancies regarding the definition of resilience, and some researchers argue that resilience is a dynamic process that can change over time,[15] future research should examine the development and invariance of resilience over time and its predictive nature on student-athletes' burnout. Second, one school did not participate at the first measurement point. This was due to the fact that the school volunteered to participate only at the second measurement point. Although we acknowledge this to be a limitation of the present study, including an additional school at the second measurement point increased the representativeness of Finnish upper secondary sport schools. Third, we did not have clinical or any other kind of cutoff values for sport and school burnout, and therefore, it is hard to know what the results actually mean. Nevertheless, those who showed a profile characterized by burnout symptoms differed in terms of sport dropout from their non-burned out peers, indicating that the chosen profiles did differ in terms of real-life consequences. Second, only self-reports of student-athletes were used, and, thus, only partial view of the phenomenon can be gained. Future studies should examine the development of sport and school burnout by including reports also from the coaches, parents, and teachers. Moreover, physiological and observational burnout measures should be used (e.g., cognitive tests or measures of blood cortisol level), which could also help developing cut-off scores. Third, another measuring time at the very end of the third school year could

have been included as it is possible that the stabilization of burnout symptoms in the *Increased burnout* group was merely a results of returning from holidays. Consequently, future research should examine the development of burnout symptoms with equal time points throughout upper secondary school. Finally, the study was conducted only in one cultural setting, that is, Finland, and the results may not be applicable to other countries and cultures. The schooling system of student-athletes in Finland is very different from other cultural contexts, such as the U.S, where student-athletes are offered athletic scholarships to pursue their University education. Therefore, the student-athletes in the U.S may not need to put so much effort into education at upper secondary school level, but they can focus more on sport. Therefore, it would be important to examine the longitudinal development of sport and school burnout also in other cultural settings.

Perspectives

The present study followed up the burnout symptoms of student-athletes throughout upper secondary school and was, therefore, able to address some of the shortcomings of the previous research by using a long timeframe and several measuring points. Furthermore, a person-oriented approach was used, which allows the identification of different subpopulations. In order to find the right prevention and treatment strategies, it is essential to acknowledge that the burnout symptoms of student-athletes may show different developmental trajectories. As a practical implication, those with increasing burnout symptoms should be detected early as they are at significant risk of dropping out. Furthermore, student-athletes at upper secondary schools may benefit from learning resilience-related skills, such as uplifting meta-reflective strategies and positive appraisals,[16,17] which could protect them from burning out in sport and school.

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Table 1. Correlations, Means, and Standard deviations (Sd) of Burnout for Sport and School at time T1-T4

	Sport Burnout				School Burnout			
	T1	T2	T3	T4	T1	T2	T3	T4
T1	1							
T2	.55	1						
T3	.44	.53	1					
T4	.45	.49	.69	1				
T1	.39	.31	.35	.30	1			
T2	.28	.47	.41	.34	.62	1		
T3	.34	.33	.51	.41	.47	.60	1	
T4	.28	.34	.37	.43	.47	.61	.74	1
Mean	1.81	1.89	2.05	2.13	2.48	2.62	2.69	2.65
Sd	0.57	0.63	0.71	0.77	0.67	0.73	0.77	0.77

Table 2. Final GMM: Fit Indices, Estimated Class Sizes and Entropy for One to Three Latent Classes.

Number of classes	AIC	BIC	LMR	BLRT	Class sizes	Entropy
1	5620.204	5699..936	-	-	491	
2	5355.875	5519.536	.0015	< .0001	293, 198	.555
3	5269.768	5517.358	.2375	< .0001	40, 267, 156	.712
4	5230.158	5561.677	.4019	.2667	40, 273, 32, 146	.749

Note. AIC = Akaike's information criteria; BIC = Bayesian information criteria; LMR = Lo Mendell-Rubin likelihood ratio test; BLRT = Bootstrapped likelihood ratio test.