Bentzen, M., Lemyre, N., Henttä, G. (2016). Development of exhaustion for high-performance coaches in association with workload and motivation: A person-centered approach. *Psychology of Sport And Exercise, 22*, 10-19.

Development of Exhaustion for High-Performance Coaches in Association with Workload and Motivation: A Person-Centered Approach

Marte Bentzen[1], Pierre-Nicolas Lemyre[1], Göran Henttä[2]

[1]Norwegian School of Sport Sciences

[2]The Swedish School of Sport and Health Sciences

Correspondence concerning this article should be addressed to:

Marte Bentzen, Department of Coaching and Psychology, The Norwegian School of Sport Sciences, PB 4014 Ullevål Stadion, 0806 Oslo, Norway.

Email: marte.bentzen@nih.no

Phone number: 0047 990 20 101

Date submitted:	11 November, 2014
Date resubmit:	27 March, 2015
Date second resubmission:	11 June, 2015
Accepted:	16 June, 2015

Acknowledgement: Thanks to Andreas Ivarsson, PhD, Halmstad University, Sweden, for statistical advice.

Highlights 85 words

- Latent class growth analyses were used to examine for different trajectories of exhaustion for high-performance coaches over a competitive season.
- Four different trajectories of exhaustion among the coaches were identified; “*High*” (10%), “*Increase*” (15%), “*Decrease*” (4%) and “*Low*” (71%).
- When associating the different trajectories to workload, work-home interference (WHI), recovery, intrinsic and identified regulation, adaptive and maladaptive profiles were identified.
- A maladaptive profile corresponded to higher perceived workload and WHI, lower recovery, and intrinsic and identified regulation, when compared to an adaptive profile.

Abstract

Objectives: The aim of the current study was twofold. First, to explore whether there were different trajectories of exhaustion among high-performance coaches over the course of a competitive season. Then, to investigate whether workload-related variables and motivational regulations were associated with exhaustion class membership.

Methods and design: 299 high-performance coaches responded to an online survey at the start, middle, and end of a competitive season, assessing exhaustion, workload, work home interference (WHI), recovery, and motivational regulations. Latent class growth analyses were used to identify different trajectories of perceived exhaustion. Further, multinomial logistic regression examined class associations for workload-related variables and motivational regulations at the start and at the end of competitive season.

Results: Four different trajectories of perceived exhaustion among coaches were identified, termed respectively "*High*" (10%), "*Increase*" (15%), "*Decrease*" (4%) and "*Low*" (71%). Higher levels of workload and WHI were associated to classes with higher levels of exhaustion. Higher levels of recovery, and intrinsic and identified regulations were associated to classes with lower levels of exhaustion. Adaptive and maladaptive profiles were identified.

Conclusions: Different trajectories of exhaustion among high-performance coaches over the course of a competitive season were found. A maladaptive profile was associated with higher perceived workload and WHI, as well as lower levels of recovery, intrinsic and identified regulations, when compared to the adaptive profile.

Keywords: exhaustion, person-centered approach, WHI, recovery, motivational regulation, high-performance coaches

Development of Exhaustion for High-Performance Coaches in Association with Workload and Motivation: A Person-Centered Approach

Exhaustion is the core component of burnout, and reflects the feeling of being overextended and depleted of resources in relation to one's work (Maslach, Schaufeli, & Leiter, 2001). In the context of sports, coaches are the providers in a provider/-receiver relationship, a key characteristic in helping professions, and a characteristic that makes them vulnerable to burnout (Maslach et al., 2001). Coaches have a key role within the coach-athlete-performance relationship (Lyle, 2002). Excellent high-performance coaches are expected to have the competencies to efficiently train sport-specific skills, motivate athletes, help athletes maximize effort and recovery, and prepare athletes for numerous competitions (Côté, Young, North, & Duffy, 2007, p. 14). When sport organizations care for the motivation and well-being of high-performance coaches, then this increases the probability of coaches staying longer in their jobs, adding important experiences and skills on their way to excellence in their work (Bentzen, Lemyre, & Kenttä, in press a), and provide them with necessary energy to be excellent coaches (Bentzen, Lemyre, & Kenttä, in press b). Despite the importance to prevent burnout in coaches, most studies on burnout in sports have focused on athletes. Only about 40 studies have been conducted with coaches and those reached no consensus on the prevalence of burnout (Raedeke & Kenttä, 2013). Findings range from a low to a high prevalence, but most studies report low levels of coach burnout (Raedeke & Kenttä, 2013). In keeping with the "healthy worker effect," it is a challenge to research the onset and the development of a maladaptive syndrome such as burnout in mostly symptom-free populations (Schaufeli & Enzmann, 1998). Therefore, longitudinal studies that better target subpopulations at risk are essential to enhanced understanding of the burnout process, and such focus is particularly sought after by high-performance coaches (Goodger, Gorely, Lavallee, & Harwood, 2007; Maslach et al., 2001).

Working as a high-performance coach is highly demanding, as it is associated with a wide range of performance and organizational stressors (Thelwell, Weston, Greenlees, & Hutchings, 2008). High-performance coaches typically have long and irregular work hours, many travel-days, and relatively short contracts (Altfeld & Kellmann, 2013; Lundkvist, Gustafsson, Hjälm, & Hassmen, 2012). At the same time, working as a high-performance coach is often perceived as fun, highly satisfying, and interesting. Individuals working within the coaching profession are often thought to be highly motivated (McLean, Mallett & Newcombe, 2012), passionate (Donahue et al., 2012), and committed (Raedeke, 2004). These characteristics of high-performance coaches and their relationship to their work has influenced the two dominant perspectives within burnout research in the last 35 years—the resource-demand perspective and the motivational perspective (Schaufeli, Leiter, & Maslach, 2009). The resource-demand perspective describes how a persistent imbalance of demands over resources typically creates a lack of energy, which initiates a negative process that leads to burnout (Bakker & Demerouti, 2007). Eventually and especially if opportunities and skills to recover are weak, depletion of energy may lead to burnout (Sonnentag, Kuttler, & Fritz, 2010). The second perspective concerns motives rather than energy (Schaufeli et al, 2009). It has been argued that all employees can experience high degrees of stress due to high demands, though only those employees entering the job with high goals, and high levels of expectation and motivation are at-risk for burnout (Pines, 1993). Both perspectives are reflected within the high-performance coach occupation and it is important to investigate them together to thoroughly grasp the intricacies of burnout propensity in high-performance coaches.

In the resources-demand perspective, perceived workload (Leiter & Maslach, 2004) and work home interference (WHI; Peeters, Montgomery, Bakker, & Schaufeli, 2005) are two frequently studied variables in the work environment, which have a positive relationship with burnout. Perceived workload is one's personal assessment of available time and resources to do the expected work and whether what is expected of them are exceeding what is perceived as legitimate (Leiter & Stright, 2009). In case of a large discrepancy between perceived workload and resources, individuals' level of burnout is likely to increase over time (Maslach et al., 2001). Workload in particular has been found to be related to the dimension of exhaustion (Leiter & Stright, 2009). Two recent studies among high-performance coaches have found that perceived workload was an important contributor to the development of exhaustion (Bentzen et al., in press b; Lundkvist et al, 2012). Further, many high-performances coaches experience high workload in combination with inconvenient work hours and high travel demand, which could create additional risk factors associated with burnout (Thelwell et al, 2008). A high workload combined with inconvenient work hours also presents a work-life balance challenge. WHI is likely to develop when attempts to balance work and other life activities and responsibilities fail and when problems arise as a consequence (Bakker, ten Brummelhuis, Prins, & van der Heijden, 2011). A qualitative study among coaches revealed that WHI likely contributes to the development of burnout in coaches, as WHI is an important stressor (Lundkvist et al., 2012).

Recovery skills and behaviors are key factors predicting individuals' health, well-being, and work performance, as well as in preventing negative work outcomes such as burnout (Sonnentag & Fritz, 2007; Siltaloppi, Kinnunen, & Feldt, 2009). A recent study followed six professional soccer coaches with the aim to explore the relationship between stress and recovery over a competitive season (Kellmann, Altfeld, & Mallett, 2015). Findings indicated that coaches' stress levels remained stable over the season, but their recovery behavior decreased. Kellman et al. (2015) suggest that in periods of season where the workload is of necessity consistently high it is of extra importance to focus on quality of recovery. There are two important aspects of recovery, namely psychological detachment and relaxation (Sonnentag & Fritz, 2007). Psychological detachment refers to the ability to refrain from work-related activities and thoughts during non-work time, implying mentally disengaging from one's job whilst away from work (Sonnentag & Fritz, 2014). A review revealed that workload had a negative relationship with psychological detachment, and that it forms both a mediator and a moderator within the relationship between job demands and burnout (Sonnentag & Fritz, 2014). Relaxation is a process associated with leisure activities and down time, where the individual deliberately chooses activities to reduce activation and increase positive affect (Sonnentag & Fritz, 2007). The ability to relax has been positively associated with positive affective states at the beginning of a work-week (Fritz, Sonnentag, Spector, & McInroe, 2010), and has been shown to prevent exhaustion (Siltaloppi et al., 2009). So far, no known studies have focused on recovery for sport coaches in the primary prevention of burnout (Raedeke & Kenttä, 2013).

Using a self-determination theory (SDT: Deci & Ryan, 2000) framework, research investigating burnout has identified the erosion of motivation as an important antecedent to burnout (Lemyre, Treasure, & Roberts, 2006; Fernet, Guay, Senecal, & Austin, 2012; Sullivan, Lonsdale, & Taylor, 2014). More explicitly, the quality of motivation seems crucial when exploring this relationship (Deci & Ryan, 2000). The quality of motivation is described by different motivational regulations based on how self-determined, or integrated within the self, the activity is for the individual (Chemolli & Gagne, 2014; Ryan & Deci, 2002). Intrinsic regulation refers to initiating an activity for its own sake and because it is interesting and satisfying in itself as opposed to doing an activity for an external goal. Identified regulation describes behavior that is done because the person values the activity and when it feels personally important. Introjected regulation refers to behavior that is regulated to avoid guilt and shame or to attain ego enhancements, such as pride. External regulation refers to behavior that is performed to satisfy external demands or to reward contingency (Deci & Ryan, 2000).

More self-determined motivational regulations, intrinsic and identified, leads to interest, excitement, and greater psychological health, while less self-determined regulations, introjected and external, are more likely to lead to the draining of energy and ill-being (Chemolli & Gagne, 2014; Deci & Ryan, 2000). Two previous studies examining the relationship between quality of motivation and burnout at work have used an aggregated motivational index, collapsing motivational regulations in a single score (Fernet, Guay, Senecal, & Austin, 2012; Sullivan et al., 2014). Findings suggested that high levels of self-determined motivation are negatively related to burnout. This approach has been criticized by Chemolli and Gagné (2014), arguing that each motivational regulation is a continuum on its own, thus the quality of motivation should be measured with separate regulation scores rather than as a sum score for all regulations. Two studies have investigated the relationship between four motivational regulations and exhaustion among coaches (McLean, et al., 2012), doctors, and nurses (van Beek, Hu, Schaufeli, Taris, & Schreurs, 2012). Both reported similar patterns of findings as previous research, while adding important nuances. As expected, intrinsic and identified regulations were negatively related to exhaustion, while introjected and external regulations were positively associated to exhaustion. Intrinsic motivation offered the strongest (negative) relationship to exhaustion, while relationships were incrementally weaker as motivational regulations represented less internalized forms of motivation. Further, when testing how the specific motivational regulation predicted burnout, only identified and intrinsic regulation were significant predictors across both nurses and doctors (van Beek, et al., 2012). These findings demonstrate that intrinsic motivation and identified regulation are important (negative) predictors of exhaustion. It is clear that different motivational regulations may single-handedly prevent or contribute to the development of burnout in coaches (Chemolli & Gagné, 2014).

Burnout is believed to develop over time (Maslach et al., 2001). Despite this, there is a lack of longitudinal research among coaches investigating how it develops (Altfeld & Kellmann, 2013; Raedeke & Kenttä, 2013). Furthermore, it is important to explore for subgroups of particular interest within samples, as for instance those who experience high or increasing levels of burnout. Several studies on burnout in the field of occupational and health psychology have used a longitudinal person-centered approach. Findings clearly indicate that distinct subpopulations yielded different levels of burnout at the start of the study and developed different patterns over time (e.g., Hatinen, Makikangas, Kinnunen, & Pekkonen, 2013; Rudman & Gustavsson, 2011). The authors of these studies highlighted the advantage of this method as it enhanced the possibility of identifying, predicting, and differentiating between subgroups, and these results can this help increase our knowledge on how best to craft preventive strategies for distinct subpopulations.

The aim of the current study was to assess whether there are important differences in the experience of exhaustion over the course of a season in high-performance coaches. The study is explorative, categorizing types of experiences of exhaustion in high-performance coaches. An increment in exhaustion was expected to be found in at least one of the subpopulations over the course of the season (Raedeke, 2004). Secondly, assuming that different subpopulations with differentiated development of exhaustion over the season were found, it was expected that these subpopulations would be differently associated with workload-related variables and motivational regulations. Coaches higher in perceived workload, WHI, and introjected and external regulations were expected to be in a subpopulation with higher levels of exhaustion. Further, coaches higher in psychological detachment, relaxation, identified, and intrinsic regulations were expected to be in a subpopulation with lower levels of exhaustion.

Method

Participants and Procedures

High-performance coaches in this study coached athletes competing at the highest national level (team sports: the highest domestic leagues for male and female; individual sports: athletes competing at the highest levels at their national championships within their sports). Coaches from 15 sports in Norway and nine sports in Sweden were recruited with the assistance of National Sport Federations and were invited to participate in a longitudinal study over a competitive season (T1 = three weeks before start; T2 = mid-season; T3 = three weeks before the end). The sports involved are listed according to the size of participation, where the sport with the highest number of study participants is listed first: Soccer, track and field, biathlon, swimming, handball, cross country skiing, orienteering, ice-hockey, volleyball, basketball, ski jumping, alpine skiing, skating, Nordic combined, and telemark skiing. The response rate was as follows: T1: N = 467 (54.7%); T2: n= 338 (39.6%); T3: n = 342 (40.2%)[1]. The study was approved by the Norwegian Social Science Data Services and The Regional Ethical Review Board in Sweden, and all participants provided written informed consent.

Measures

All variables were measured at all three time points, despite the demographic variables that were only measured at T1. The length of competitive season was calculated on an average of the response date from T1 to T3 for each sport separately. Due to the international coaching population in Scandinavia, the questionnaire could be answered in Norwegian, Swedish, or English. The original version of the English questionnaire was used, while

[1] Data obtained for this investigation were part of a larger study, which longitudinally examined the process of burnout among high-performance coaches. Some of the same participants have been used in a different manuscript (Change in Motivation and Burnout Indices in High-Performance Coaches Over The Course of a Competitive Season, Journal of Applied Sport Psychology, in second revision), though this sample were larger due to lower dropout rate as this study only used data from two time points (n = 343). Also some of the same variables are used, though as residual change scores for: autonomy support, workload, autonomous motivation, controlled motivation and exhaustion. In addition, this manuscript used several other variables which this manuscript does not use, such as change in: the psychological needs of autonomy, competence and relatedness, cynicism, reduced personal accomplishment, vitality and satisfaction with work.

translated and validated versions of the Norwegian and Swedish questionnaires were used if available. If unavailable, a translation-back-translation method was used (Duda & Hayashi, 1998). All questionnaires were answered on a 7-point Likert-scale ranging from 1 (*strongly disagree*) to 7 (*strongly disagree*), except for the Work Home Interference and Exhaustion questionnaires.

Exhaustion. Exhaustion was measured by the exhaustion subscale from Maslach Burnout Inventory—General scale (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) (five items, e.g., “I feel emotionally drained from my work”, α_{time1} = .84; α_{time2} = .88; α_{time3} = .89). The scale has previously shown acceptable internal consistency across different occupational groups and over time (Richardsen & Martinussen, 2005). Each item was rated on a scale with the following specifications: 0 (*never*), 1 (*a few times a year or less*), 2 (*once a month or less*), 3 (*a few times a month*), 4 (*once a week*), 5 (*a few times a week*), and 6 (*every day*).

Workload. Workload was assessed by the subscale Workload from The Areas of Work Life Scale (AWLS: Leiter & Maslach, 2004) (six items, e.g., “I do not have time to do the work that must be done”, α_{time1} = .75; α_{time2} = .79; α_{time3} = .79). The AWLS has previously demonstrated acceptable internal validity in the sport setting of its different subscales (α = .78-.90) (DeFreese & Smith, 2013).

Work Home Interference. The scale by Kopelman, Greenhaus, and Connolly (1983) was used to measure WHI. The term “my family life” was reformulated as “my private life” (5 items, e.g., “My work schedule often conflicts with my private life”, α_{time1} = .76; α_{time2} = .82; α_{time3} = .84). Each item was rated on a scale with the following specifications: 1 (*never*), 2 (*sometimes*), 3 (*often*), and 4 (*always*). The scale has previously shown satisfactory internal consistency across three samples (α = .75-.81) (Geurts, Kompier, Roxburgh, & Houtman, 2003).

Recovery. Recovery was measured by two of the subscales in the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007). Four items measured psychological detachment (e.g., "I forget about work", α_{time1} = .80; α_{time2} = .86; α_{time3} = .86), and four items measured relaxation (e.g., " I kick back and relax", α_{time1} = .73; α_{time2} = .83; α_{time3} = .81). Both subscales have previously demonstrated good internal consistency—psychological detachment (α = .90); relaxation (α = .83) (Sonnentag, Binnewies, & Mojza, 2008).

Motivational Regulations. Motivational Regulations were measured by subscales of Self-Regulation Questionnaire at Work, which is validated in Norwegian (Gagné et al., 2014). The regulations measured were: Intrinsic regulation by three items (e.g., "Because I have fun doing my job", α_{time1} = .85; α_{time2} = .90; α_{time3} = .90); Identified regulation by three items (e.g., "Because I personally consider it important to put efforts in this job", α_{time1} = .69; α_{time2} = .74; α_{time3} = .78); Introjected regulation by four items (e.g., "Because I have to prove to myself that I can", α_{time1} = .67; α_{time2} = .66; α_{time3} = .68); External social regulation by three items (e.g., "To get others' approval", α_{time1} = .81; α_{time2} = .83; α_{time3} = .84). Some subscales revealed relatively low internal consistency (< .70), however all these scales had few items and were thus retained for further analyses in their original form (de Vaus, 2002).

Data analysis

Prior to conducting a detailed investigation of the hypotheses, a decrease in response rate from season start to mid and end season was explored. Little's MCAR test on missing data showed that the data was not completely missing at random (χ^2 = 17552.63 df = 17190, p = .03). Further, drop-out analysis was conducted to test for differences between those participating at all three time points (*n*= 299) versus those only answering at T1 (*n* = 86), T1 and T2 (*n* = 38), and T1 and T3 (*n* = 44) for all study variables at T1 with one way ANOVA. No significant differences between the groups were found. Hence, the assumption was made that the data were missing at random (MAR). Several options on how to handle the missing data were considered[2], but it was decided to do the further analysis on the data of the 299 coaches (35.1%) answering at all three time points. Of these data, the maximum rate of missing data was as follows: T1, 1.7%; T2, 1.3%; T3, 1.3%. Skewness and kurtosis values for all items ranged from │-1.80 to 2.18│ and │-1.65 to 6.36│, indicating normally distributed data (Kline, 2011). Estimates of internal consistency were derived from score reliability (Cronbach, 1951).

Latent class growth analysis (LCGA) is a statistical method suitable for analyzing longitudinal data in order to identify distinct trajectories (Jung & Wickrama, 2008). Distinct subgroups of individuals are identified following a distinct pattern of change over time on a variable of interest (Andruff, Carraro, Thompson, Gaudreau, & Louvet, 2009, p. 11). LCGA were conducted to identify the number of trajectories for exhaustion for the current population over the competitive season (Jung & Wickrama, 2008) using Mplus (MPlus 7.2., Muthén & Muthén, 2012). To identify the trajectories in the current study, the variance of the slope was fixed to zero, while the variance in the intercept was free. This was done to get a more restrictive model. Several criteria were used to evaluate model estimation fit and decide the number of latent classes; the smallest Aikaike's Information Criterion (AIC), the smallest Bayesian information criteria (BIC), highest possible entropy, and significant results on the Bootstrap Likelihood Ratio Test (BLRT) (Jung & Wickrama, 2008; Nylund, Asparoutiov, & Muthen, 2007). The BLRT compares the different solutions to the number of trajectories. A significant p-value (p<. 05) indicates that the k-1 model have been rejected in favor of a model with at least k trajectories (Nylund et al., 2007). In addition to the statistical findings of model fit it is also recommended that these results be balanced with theoretical justification and interpretability when deciding the number of trajectories (Jung & Wickrama, 2008). After

[2] Alternative statistical possibilities are discussed in appendix A.

identification of the distinct trajectories, multinomial logistic regression analyses were used to explore whether class membership could be associated to the covariates (workload, WHI, recovery, and motivational regulations) both at T1 and T3. Analyses were conducted in MPlus. Due to relatively small samples for some of the trajectories, each individual covariate was tested in separate models.

Results

Descriptive

The average age of the coaches was 41 (*SD* = 10) and the average years of experience was 15.5 years (*SD* = 10). Of coaches, 8.4% were females and 91.6% were males, and 56.5% of worked in Norway, while 43.5% worked in Sweden. The population consisted of 44.5% coaches for team sports and 55.5% of individual sports. Due to differences in the length of the competitive seasons for the coaches in the different sports (range = 4–10 months), two preliminary tests were carried out. Bivariate correlations were conducted to examine the relationship between length of season and exhaustion at the three time-points, and one-way ANOVA was used to investigate for differences in average length of competitive seasons between the four trajectories and their respective exhaustion levels. No significant results were found.

One-way repeated ANOVAs were conducted to compare mean scores on exhaustion at the start (*M* = 1.68, *SD* = 1.05), halfway (*M* = 1.83, *SD* = 1.16) and end (*M* = 1.91, *SD* = 1.2) of the season. Results revealed a significant increase throughout the season for the whole population, F (2, 297) = 8.61, $p < .001$, eta squared (η^2) = .06.

Determination of Number of Latent Classes

The fit indices for the different number of latent classes from the LGCA are presented in Table 1. Due to significant BLRT values for the four and five-class solutions, a four-class solution was chosen, based on the argument that this class had the lowest BIC value. In addition, the five-class solution had two classes that were almost identical in both intercept and slope, so it was more meaningful to choose the four-class solution. Figure 1 illustrates growth over the season for the four different exhaustion trajectories. Trajectory 1 consists of 29 participants (10%) and is labeled "*High*" (Intercept: *M* = 3.32, *SE* = .35, *p* = <. 001; Slope: *M* = .15, *SE* = .15, *p* = .30). Trajectory 2 consists of 44 participants (15%) and is labeled "*Increase*" (Intercept: *M* = 1.66, SE = .24, *p* = <. 001; Slope: *M* = .87, *SE* = .11, *p* = <. 001). Trajectory 3 consists of 13 participants (4 %) and is labeled "*Decrease*" (Intercept: *M* = 3.04, *SE* = .32, *p* = <. 001; Slope: *M* = - .88, *SE* = .12, *p* = <. 001). Trajectory 4 consists of 213 participants (71 %) and is labeled "*Low*" (Intercept: *M* = 1.34, *SE* = .08, *p* = <. 001; Slope: *M* = .02, *SE* = .03, *p* = .56).

Covariates' Associations to Exhaustion Class Membership at T1 and T3

Descriptive statistics for all covariates in the latent trajectories of exhaustion at both T1 and T1 are presented in Table 2. Results from the multinomial logistic regressions are presented in Table 3, showing coefficient (log odds ratio) differences (and odds ratio) for trajectory group membership on the eight independent covariates at both T1 and T3. All paired class comparisons for the final four-class LCGA are presented.

At T1, the probability of being classified as "High" (Class 1) rather than "Low" (Class 4) increases when the participants are higher in perceived workload, WHI, and external regulation. It decreases when coaches are higher in relaxation and intrinsic regulation. The probability of being in "Increase" (Class 2) rather than "Low" (Class 4) increases when the participants' perceived higher workload and WHI, and decreases when psychological detachment and relaxation are higher. The probability of being in "Decrease" (Class 3) rather than "Low" (Class 4) increases when the participants are higher in workload and WHI. The probability of being in "High" (Class 1) rather than "Increase" (Class 2) increases when participants are higher in psychological detachment.

At T3, the probability of being classified as “High” (Class 1) rather than “Low” (Class 1) increases when the participants are higher in perceived workload, WHI, and introjected regulation. It decreases when their psychological detachment, relaxation, and intrinsic regulation are higher. The probability of being in “Increase” (Class 2) rather than “Low” (Class 4) increases when the participants are higher in perceived workload and WHI, and decreases when psychological detachment, relaxation, and intrinsic motivation are higher. The probability of being in “Decrease” (Class 3) rather than “Low” (Class 4) increases when the participants are higher in identified regulation. The probability of being in “High” (Class 1) rather than “Decrease” (Class 3) increases when participants perceived workload and WHI is higher, and decreases when the participants psychological detachment, relaxation, and identified regulation are higher. The probability of being in “Increase” (Class 2) rather than “Decrease” (Class 3) increases when participants perceived higher workload and WHI, and decreases when participants’ psychological detachment, relaxation, and identified regulation are higher. Finally, the probability of being in “High” (Class 1) rather in “Increase” (Class 2) increases when participants are higher in psychological detachment.

Discussion

The current study is the first to investigate the developmental trajectories of exhaustion in high-performance coaches throughout a competitive season using LCGA. Results confirmed that LCGA provides an opportunity to describe a more nuanced picture of the development of exhaustion in sub-populations of coaches, as compared to analyzing change in mean values for the overall population. As expected, one trajectory did increase in exhaustion over the season (15%). The increase was substantial as it developed from being low in exhaustion at the beginning of the season to high at the end of the season, using the threshold criteria by Maslach, Jackson, and Leiter (1996).

Somewhat surprisingly, two trajectories started out high in exhaustion at the beginning of the competitive season. However, this finding is likely reflecting the reality of exhaustions levels at the start of the competitive season. Even though data collection was collected at the start of the season, coaches had already been working during pre-season. Additionally, the findings shed light on the insufficient length of vacation between the end of a competitive season and a new pre-season—some coaches hardly take a break (McChesney & Peterson, 2005). However, authors of a meta-analysis (de Bloom, Kompier, Geurts, de Weerth, Taris, & Sonnentag, 2009) argued that the beneficial effects of recovery after vacation on health and well-being fade out shortly after work resumption. Consequently, prevention of higher levels of exhaustion is most likely to be efficient when making changes in the work environment, rather than relying on long term effect from recovery between seasons. Importantly, the two trajectories that were high in exhaustion at the beginning of the competitive season developed differently. One trajectory (4%) unexpectedly decreased from high level to low level of exhaustion over the season (Maslach et al., 1996). Findings are promising in regard to secondary prevention, as it seems possible for coaches to bounce back and recover from higher levels of exhaustion *during* a competitive season. The other trajectory starting out high in exhaustion remained high throughout the season (10%). Being highly exhausted over a longer period of time has shown to increase cynicism and decrease one's sense of accomplishment, and these high-performance coaches are thereby highly at risk of developing a more severe state of burnout (Taris et al., 2005).

Finally, the majority of the high-performance coaches remained low in exhaustion throughout the season (71%) (Maslach et al., 1996). This result clearly supports Schaufeli and Enzmann's (1998) concern about studying the phenomena of burnout in a low-burnout population, which could be problematic for the validity of the findings of burnout. It is therefore of importance to use statistical methods that aim to target those high in exhaustion, such as LGCA. One out of four of the coaches (24.4%) were characterized as high in exhaustion at the end of the season, which highlights the importance of doing further research on the prevention of burnout for this profession by employing longitudinal and intervention-based research (Raedeke & Kenttä, 2013). Moreover, findings suggest that it is challenging to identify and predict coaches' variation in exhaustion profiles throughout the season based solely on their levels of exhaustion at the beginning of the season. It is therefore imperative to identify variables corresponding to different exhaustion trajectories. However, before doing so, it should be noted that several of the trajectories were of small samples. Thus results associated with these trajectories should be interpreted with caution.

The overall hypothesis that high-performance coaches with a maladaptive profile would more likely be in a trajectory with higher levels of exhaustion was supported. However, not all associated variables were of equal strength in predicting class membership. Further, there were stronger and more consistent findings of associated variables predicting class membership at the end of the season compared to the beginning of the season. This could be explained by larger differences in variance in the study variables at the end of the season. Three patterns of findings will be discussed in greater detail: (a) All workload related variables showed strong and consistent associations to exhaustion class membership (either high or low); (b) At the beginning of the season, both "Increase" (Class 2) and "Low" (Class 4) were low in exhaustion, yet, the workload related variables predicted class membership that could help foresee whom were more likely to increase or stay stable in exhaustion during the season; (c) Not all motivational regulations were consistently associated with class membership, though all significant findings were in line with expected hypotheses.

First, high levels of workload are a clear risk factor associated to experiencing higher levels of exhaustion. This is in line with previous research both among coaches in sport (Bentzen et al., in press b; Lundkvist et al, 2012) and among employees in other organizations

(Leiter & Stright, 2009; Maslach et al., 2001). Findings from a longitudinal cross-lagged study (Demerouti, Bakker, & Bulters, 2004) indicated that workload, WHI, and exhaustion had reciprocal relationship on one another over time. Even though this study did not examine the relationship between the associated variables, it is likely that to believe that those with higher perceived workload also are at greater risk of experiencing higher levels of WHI. As known, only one previous qualitative study has described how WHI was experienced as a stressor that contributes to exhaustion among elite coaches (Lundkvist et al., 2012), while no previous quantitative study among the current profession has studied this relationship. WHI came out as the strongest variable associated to probability of class membership of exhaustion. More specifically, higher levels of WHI increased the probability of being in a class experiencing higher levels of exhaustion. The long and irregular work hours and high travel demands of the coaching profession is an obvious challenge to combining private or family and professional life (Altfeld & Kellmann, 2013; Lundkvist et al, 2012). Some previous qualitative studies have discussed challenges related to WHI among female coaches (e.g., Dixon & Bruening, 2007), however, current findings clearly suggest that this is an importation contributor to also male coaches levels of exhaustion.

Further, the crossed-lagged study of Demerouti et al. (2004) suggested that employees who experience higher levels of WHI might have more difficulties recovering at home. While this relationship was not tested in the current study, overall findings indicated that coaches with lower levels of psychological detachment and relaxation were more likely to be in a class with higher levels of exhaustion. Findings are in line with Kellman et al.'s (2015) results, which indicated that recovery is key when stress levels are high. Moreover, findings from the current study extend this claim, as they are the first results known concerning recovery for primary prevention of exhaustion among high-performance coaches. They also follow similar findings from other occupational groups (e.g., Siltaoppi et al., 2009; Sonnentag & Fritz, 2014). Previous research on high-performance coaches in a stress perspective shows the importance of a focus on coaches' needs and ability to recovery, as this should not be a topic exclusively concerning athletes in sport (Fletcher & Scott, 2010).

Secondly, the results of the difference in workload related variables association to classes of high and low in exhaustion were replicated when comparing "Increase" (Class 2) and "Low" (Class 4) who were both low in exhaustion at the beginning of the season. The results could be applied to help predict differences between those coaches who are going to remain low in exhaustion and those who are going to increase in exhaustion over the competitive season based on associated variables: Coaches reporting high levels of workload and WHI and low levels of psychological detachment and relaxation were more likely to be in the class that increases in exhaustion through the season. These findings are in line with previous research in the demand-resource perspective (Bakker & Demerouti, 2007), suggesting that higher demands and lower levels of recovery possibilities and skills will eventually enhance exhaustion levels.

There are practical implications to be drawn from the results of the workload related variables relation to exhaustion among high-performance coaches. First of all, sports organizations have to help coaches maintain a sustainable workload over the season (Bentzen et al., in press a; Bentzen et al. in press b; Fletcher & Scott, 2010). Second, coaches themselves need to be highly aware of the challenges attached to combine their private life with a high-performance coaching job, and prevent interference by planning, foreseeing, and discussing possible obstacles with important persons in their private life. Additionally, sports organizations as employers should be aware of the benefits that might be gained of having coaches as employees who manage to have a sound and solid private life (Geurts, Rutte, & Peeters, 1999). Consequently, the employers would benefit from supporting coaches to address challenges regarding WHI on a regular basis. They can help coaches to develop clear strategies on how to best handle these obstacles in order to minimize work life interfering with their private life, causing additional life stressors from the private domain that might be accumulated throughout the season. Further, it is of necessity for high-performance coaches to implement recovery strategies both in the hometown and when traveling. When possible, such as in training periods in hometown, coaches should aim to lower their workload, have shorter work hours (Sonnentag & Niessen, 2008), and detach from work by engaging in non-work activities that require their full attention (Sonnentag, Kuttler, & Fritz, 2010). Moreover, when coaches are traveling for competitions and training camps they are often at work around the clock (Olusoga, Maynard, Hays, & Butt, 2012). During these periods it is of importance to find some time for recovery, such as taking time to exercise (Sonnentag & Niessen, 2008) or other and commit to schedule restorative work-breaks (Trougakos, Beal, Green, & Weiss, 2008). Furthermore, it is important for employers to promote the careful planning of the coaches' work schedule, balancing it with leisure time, and regularly discussing with coaches to help them solve challenges such as media attention (outside work hours) and restrict how available they are by email and phone (Sonnentag & Niessen, 2008). Due to the 'unstructured' nature of the high-performance coaching job, these challenges are most likely solved individually and greatly vary based on sports and performance level. Moreover, coaching education needs to emphasize recovery skill acquisition, as it is a fundamental proficiency facilitating the process toward becoming a professional coach.

Finally, findings pertaining to the relationship between motivational regulations and class membership of exhaustion were not as consistent as findings pertaining to workload variables. Higher levels of introjected and external regulations failed to systematically show associations to classes of higher levels of exhaustion, as they predicted class membership of higher class of exhaustion within one analysis each. Earlier studies have also revealed similar findings where weak and positive associations were found in relationship to exhaustion

(McLean et al., 2012; van Beek et al., 2012). Recently, a study using change in controlled motivation over a season (introjected + external regulations) as a predictor for change in burnout dimensions for the same time span reported no significant relationships (Bentzen, et al. in press b). Although findings have been overall inconsistent, both introjected and external regulations might contribute to heightened risk for burnout. Positive associations between controlled regulations and the feeling of being exhausted were recently explored in a qualitative study investigating professional coaches showing high levels of exhaustion (Bentzen et al., in press a). The coaches revealed how the combination of having a demanding job with extensive work hours while their motivation for being at work was driven by external reasons led to energy depletion. These experiences are in line with the tenets of SDT, that behavior that is driven by controlled regulations is more likely to be exhausting as the activity is not done of free will and is not found interesting or fun (Ryan & Deci, 2002). Thus, weaker associations found between controlled regulations and exhaustion is of interest to be discussed in relation to the stronger and more consistent findings of the relation between the autonomous regulations and exhaustion. Higher levels of intrinsic and identified regulations decreased the probability of being in a class of higher exhaustion. These findings are in accordance with previous research, indicating negative and moderate to strong associations between exhaustion and intrinsic and identified regulations respectively and exhaustion (McLean et al., 2012; van Beek, et al., 2012). Evidently, coaches who are doing their work because they find it satisfying, fun, and interesting are less prone to experience high levels of exhaustion.

These findings could be explained by coaching being a well-integrated activity in the lives and identities of these coaches (Bentzen, et al., in press a; Vallerand & Houlfort, 2003), as they have been highly involved in their sport for a long time—both as athletes and coaches (Salmela, 1995). Consequently, if the coaches are able to sustain higher levels of autonomous regulations towards their job, it will have preventive effects. On the other hand, if the autonomous regulations are low, it would have devastating effects and would increase the risk of experiencing higher levels of exhaustion.

These results imply that it is crucial that high-performance coaches who invest extensive time and energy in their sport (Altfeld & Kellmann, 2013; Raedeke & Kenttä, 2013) are enjoying what they are doing. A suggestion both for coaches and their management is to be aware of the significance of maintaining and protecting the enjoyable side of coaching to prevent exhaustion—even when the pressure and work demands are high. Further, employers should help in limiting coaches' less meaningful and enjoyable assignments, and offer support when these assignments have to be done. Finally, coaching education should target development and awareness of coaches' ability to monitor their own quality of motivation as a useful indicator of one's own energy resources and well-being levels over time.

Limitations and Future Directions

In this study, burnout is described as a developmental process (Taris, Le Blanc, Schaufeli, & Schreurs, 2005). High exhaustion levels at the start of the competitive season may have been the result of higher demands accumulation by coaches before the current season—prior research in health care settings has shown that burnout may develop over several years (e.g., Rudman & Gustavsson, 2011). The current study has focused on trajectories with linear trends as data was collected at three specific time points during the course of a competitive season. Future research should target similar populations over a longer period and with the help of additional time points to examine non-linear developments with more complex models involving trajectories following cubic or quadratic trends (Andruff et al., 2009). Additionally, current study analyses were limited to examining the associated variables' impact on class membership. Further analysis should examine intricate relationships between the associated variable, by for instance exploring how the intercept and slope for the different trajectories could be predicted by several of the associated variables within the same model (Andruff et al., 2009).

Further, the current study only examined exhaustion as one of the three subscales of burnout. Future studies should target all three burnout dimensions to better examine how sub-populations of cynicism and reduced personal accomplishment may differentially develop over time, and assess how these may be related to workload and motivational regulation. It is expected that the motivational regulations would better predict these two subscales as they have been identified as the more motivational and interpersonal dimensions of burnout (Bentzen et al., in press b; Fernet, Austin, Trepanier, & Dussault, 2013).

Finally, it is obvious that recovery for high-performance coaches is a topic that needs more attention, both in future research and in the work setting. However, the relationships between work, psychological detachment, and relaxation are likely intricate, as many coaches perceive their occupation as a ‘hobby-job’ (Volpone, Perry, & Rubino, 2013). Future studies should explore in depth whether coaches are able to be involved in their sport in a restorative way during leisure time. Additionally, a more nuanced understanding of the mechanisms involved when coaches are thinking about their athletes and sport during off-work time, when this is both their hobby and profession is needed.

Conclusion

The current study is the first to explore different developmental trajectories for exhaustion for high-performance coaches. Findings indicated that the largest proportion of coaches stayed low in exhaustion throughout the competitive season. This offers a nuanced picture of the exhaustion level of high-performance coaches, which made it possible to explore what characterized the different trajectories in greater depth. There are distinct motivational regulations connected to exhaustion. Coaches who did their job due to higher levels of intrinsic and identified reasons prevented the experience of high levels of exhaustion. Moreover, the current study is the first to explore WHI and recovery for high-performance coaches quantitatively in relation primary prevention of exhaustion (Raedeke & Kenttä, 2013). Variation in WHI and recovery were found to be important factors in an explanation as to why some coaches were either high or low in exhaustion.

References

Altfeld, S., & Kellmann, M. (2013). Burnout in coaches. In B.R. Doolittle (Ed.), *Psychology of burnout: New research* (pp. 193-207). New York: Nova Science Publishers, Inc.

Andruff, H., Carraro, N., Thompson, A., Gaudreau, P., & Louvet, B. (2009). Latent class growth modelling: A tutorial. *Tutorials in Quantitative Methods for Psychology, 5*(1), 11-24.

Bakker, A. B., & Demerouti, E. (2007). The job demands resources model: state-of-the-art. *Journal of Managerial Psychology, 22*, 309-328. doi:10.1108/02683940710733115

Bakker, A. B., ten Brummelhuis, L. L., Prins, J. T., & van der Heijden, F. M. M. A. (2011). Applying the job demands-resources model to the work-home interface: A study among medical residents and their partners. *Journal of Vocational Behavior*, *79*(1), 170-180. doi:10.1016/j.jvb.2010.12.004

Bentzen, M., Lemyre, P. N., & Kenttä, G. (in press a). The process of burnout among professional sport coaches explored through the lens of Self-determination theory: A qualitative approach. *Sports Coaching Review*. doi:10.1080/21640629.2015.1035050.

Bentzen, M., Lemyre, P. N., & Kenttä, G. (in press b). Change in motivation and burnout indices in high-performance coaches over the course of a competitive season. *Journal of Applied Sport Psychology.* doi:10.1080/10413200.2015.1053160.

Chemolli, E., & Gagne, M. (2014). Evidence against the continuum structure underlying motivation measures derived from self-determination theory. *Psychological Assessment, 26*(2), 575-585. doi:10.1037/a0036212

Côté, J., Young, B., North, J., & Duffy, P. (2007). Towards a definition of excellence in sport coaching. *International Journal of Coaching Science, 1*(1), 3-16.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334. doi:10.1007/BF02310555 de Bloom, J., Kompier, M., Geurts, S., de Weerth, C., Taris, T., & Sonnentag, S. (2009). Do we recover from vacation? Meta-analysis of vacation effects on health and well-being. *Journal of Occupational Health, 51*(1), 13-25. doi:10.1539/joh.K8004

de Vaus, D. (2002). *Analyzing social science data: 50 key problems in the data analysis*. London: Sage Publications Ltd.

Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. doi:10.1207/S15327965PLI1104_01

DeFreese, J. D., & Smith, A. L. (2013). Areas of worklife and the athlete burnout-engagement relationship. *Journal of Applied Sport Psychology, 25*(2), 180-196. doi:10.1080/10413200.2012.705414

Demerouti, E., Bakker, A. B., & Bulters, A. J. (2004). The loss spiral of work pressure, work-home interference and exhaustion: Reciprocal relations in a three-wave study. *Journal of Vocational Behavior, 64*(1), 131-149. doi:10.1016/S0001-8791(03)00030-7

Dixon, M. A., & Bruening, J. E. (2007). Work-family conflict in coaching I: A top-down perspective. *Journal of Sport Management, 21*(3), 377-406.

Donahue, E. G., Forest, J., Vallerand, R. J., Lemyre, P. N., Crevier-Braud, L., & Bergeron, E. (2012). Passion for Work and Emotional Exhaustion: The Mediating Role of Rumination and Recovery. *Applied Psychology-Health and Well Being, 4*(3), 341-368. doi:10.1111/j.1758-0854.2012.01078.x

Duda, J. L., & Hayashi, C. T. (1998). Measurement issues in cross-cultural research within sport and exercise psychology. In *Advances in sport and exercise psychology measurement* (pp. 471-483). Morgantown, WV: Fit.

Fernet, C., Austin, S., Trepanier, S. G., & Dussault, M. (2013). How do job characteristics contribute to burnout? Exploring the distinct mediating roles of perceived autonomy, competence, and relatedness. *European Journal of Work and Organizational Psychology, 22*(2), 123-137. doi:10.1080/1359432X.2011.632161

Fernet, C., Guay, F., Senecal, C., & Austin, S. (2012). Predicting intraindividual changes in teacher burnout: The role of perceived school environment and motivational factors. *Teaching and Teacher Education*, *28*(4), 514-525. doi:10.1016/j.tate.2011.11.013

Fletcher, D., & Scott, M. (2010). Psychological stress in sports coaches: A review of concepts, research, and practice. *Journal of Sports Sciences, 28*(2), 127-137. doi:10.1080/02640410903406208

Fritz, C., Sonnentag, S., Spector, P. E., & McInroe, J. A. (2010). The weekend matters: Relationships between stress recovery and affective experiences. *Journal of Organizational Behavior*, *31*(8), 1137-1162. doi:10.1002/job.672

Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., Van den Broeck, A., Aspeli, A. K. et al. (2014). The multidimentional work motivation scale: Validation evidence in seven languages and nine countries. *European Journal of Work and Organizational Psychology*.

Geurts, S. A. E., Kompier, M. A. J., Roxburgh, S., & Houtman, I. L. D. (2003). Does work-home interference mediate the relationship between workload and well-being? *Journal of Vocational Behavior, 63*(3), 532-559. doi:10.1016/S0001-8791(02)00025-8

Geurts, S., Rutte, C., & Peeters, M. (1999). Antecedents and consequences of work-home interference among medical residents. *Social Science & Medicine, 48*(9), 1135-1148. doi:10.1016/S0277-9536(98)00425-0

Goodger, K., Gorely, T., Lavallee, D., & Harwood, C. (2007). Burnout in sport: A systematic review. *Sport Psychologist, 21*(2), 127-151.

Hatinen, M., Makikangas, A., Kinnunen, U., & Pekkonen, M. (2013). Recovery from burnout during a one-year rehabilitation intervention with six-month follow-up: Associations with coping strategies. *International Journal of Stress Management, 20*(4), 364-390. doi:10.1037/a0034286

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass, 2*(1), 302-317. doi:10.1111/j.1751-9004.2007.00054.x

Kellmann, M., Altfeld, S., & Mallett, C. J. (2015). Recovery-stress imbalance in Australian Football League coaches: A pilot longitudinal study. *International Journal of Sport and Exercise Psychology*, 1-10. doi:10.1080/1612197X.2015.1020662

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: The Guildford Press.

Kopelman, R. E., Greenhaus, J. H., & Connolly, T. F. (1983). A model of work, family, and inter-role conflict - A construct-validation study. *Organizational Behavior and Human Performance, 32*(2), 198-215. doi:10.1016/0030-5073(83)90147-2

Leiter, M. P., & Maslach, C. (2004). Areas of worklife: A structured approach to organizational predictors of job burnout. In P.L. Perrewe & D. C. Ganster (Eds.), *Research in occupational stress and well-being* (pp. 91-134). Oxford: Elsevier.

Leiter, M. P., & Stright, N. (2009). The social context of work life: Implications for burnout and work engagement. In C.L. Cooper, J. C. Quick, & M. J. Schabracq (Eds.), *International handbook of work and health psychology* (pp. 25-47) John Wiley & Sons Ltd. doi:10.1002/9780470682357.ch3

Lemyre, P. N., Treasure, D. C., & Roberts, G. C. (2006). Influence of variability in motivation and affect on elite athlete burnout susceptibility. Journal of Sport & Exercise Psychology, 28(1), 32-48.

Lundkvist, E., Gustafsson, H., Hjälm, S., & Hassmen, P. (2012). An interpretative phenomenological analysis of burnout and recovery in elite soccer coaches.

Qualitative Research in Sport, Exercise and Health, 4(3), 400-419. doi:10.1080/2159676X.2012.693526

Lyle, J. (2002). *Sports coaching concepts: A framework for coaches' behaviour*. London and New York: Routledge.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory Manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397-422. doi:10.1146/annurev.psych.52.1.397

McChesney, J. C., & Peterson, M. (2005). There is no off-season anymore. *Athletic Therapy Today, 10*(6), 6-10.

McLean, K. N., Mallett, C. J., & Newcombe, P. (2012). Assessing coach motivation: The development of the coach motivation questionnaire (CMQ). *Journal of Sport & Exercise Psychology, 34*(2), 184-207.

Muthén, L. K., & Muthén, B. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthen & Muthen.

Nylund, K. L., Asparoutiov, T., & Muthen, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling-A Multidisciplinary Journal, 14*(4), 535-569. doi:10.1080/10705510701575396

Olusoga, P., Maynard, I., Hays, K., & Butt, J. (2012). Coaching under pressure: A study of Olympic coaches. *Journal of Sports Sciences, 30*(3), 229-239. doi:10.1080/02640414.2011.639384

Peeters, M., Montgomery, A. J., Bakker, A. B., & Schaufeli, W. B. (2005). Balancing work and home: How job and home demands are related to burnout. *International Journal of Stress Management, 12*(1), 43-61. doi:10.1037/1072-5245.12.1.43

Pines, A. (1993). Exhaustion: An existential perspective. In W.B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 33-51). New York, NY: Taylor & Francis.

Raedeke, T. D. (2004). Coach commitment and burnout: A one-year follow-up. *Journal of Applied Sport Psychology*, *16*(4), 333-349. doi:10.1080/10413200490517995

Raedeke, T. D., & Winttä, G. (2013). Coach burnout. In P. Potrac, W. Gilbert, & J. Denison (Eds.), *Handbook of sports coaching* (pp. 424-435). New York, NY: Routledge.

Richardsen, A. M., & Martinussen, M. (2005). Factorial validity and consistency of the MBI-GS across occupational groups in Norway. *International Journal of Stress Management*, *12*(3), 289-297. doi:10.1037/1072-5245.12.3.289

Rudman, A., & Gustavsson, J. P. (2011). Early-career burnout among new graduate nurses: A prospective observational study of intra-individual change trajectories. *International Journal of Nursing Studies*, *48*(3), 292-306. doi:10.1016/j.ijnurstu.2010.07.012

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory: an organismic-dialectical perspective. In E.L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: The University of Rochester Press.

Salmela, J.H. (1994). *Learning from the development of expert coaches.* Coaching and Sport Science Journal, 1, 1-11.

Schaufeli, W. B., & Enzmann, D. U. (1998). *The burnout companion to study and research: A critical analysis*. London: Taylor & Francis.

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The Maslach Burnout Inventory: General Survey (MBI-GS). In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *Maslach Burnout Inventory Manual* (30rd ed., pp. 19-26). Palo Alto, CA: Consulting Psychologist Press.

Schaufeli, W. B., Leiter, M. P., & Maslach, C. (2009). Burnout: 35 years of research and practice. *Career Development International*, *14*(2-3), 204-220. doi:10.1108/13620430910966406

Siltaloppi, M., Kinnunen, U., & Feldt, T. (2009). Recovery experiences as moderators between psychosocial work characteristics and occupational well-being. *Work and Stress*, *23*(4), 330-348. doi:10.1080/02678370903415572

Sonnentag, S., Binnewies, C., & Mojza, E. J. (2008). "Did you have a nice evening?" A day-level study on recovery experiences, sleep, and affect. *Journal of Applied Psychology, 93*(3), 674-684. doi:10.1037/0021-9010.93.3.674

Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*(3), 204-221. doi:10.1037/1076-8998.12.3.204

Sonnentag, S., & Fritz, C. (2014). Recovery from job stress: The stressor-detachment model as an integrative framework. *Journal of Organizational Behavior*.

Sonnentag, S., Kuttler, I., & Fritz, C. (2010). Job stressors, emotional exhaustion, and need for recovery: A multi-source study on the benefits of psychological detachment. *Journal of Vocational Behavior, 76*(3), 355-365. doi:10.1016/j.jvb.2009.06.005

Sonnentag, S., & Niessen, C. (2008). Staying vigorous until work is over: The role of trait vigour, day-specific work experiences and recovery. *Journal of Occupational and Organizational Psychology, 81*, 435-458. doi:10.1348/096317908X310256

Sullivan, G. S., Lonsdale, C., & Taylor, I. (2014). Burnout in high school athletic directors: A self-determination perspective. *Journal of Applied Sport Psychology, 26*(3), 256-270. doi:10.1080/10413200.2013.853328

Taris, T. W., Le Blanc, P. M., Schaufeli, W. B., & Schreurs, P. J. G. (2005). Are there causal relationships between the dimensions of the Maslach Burnout Inventory? A review and two longitudinal tests. *Work and Stress, 19*(3), 238-255. doi:10.1080/02678370500270453

Thelwell, R. C., Weston, N. J. V., Greenlees, I. A., & Hutchings, N. V. (2008). Stressors in elite sport: A coach perspective. *Journal of Sports Sciences, 26*(9), 905-918. doi:10.1080/02640410801885933

Trougakos, J. P., Beal, D. J., Green, S. G., & Weiss, H. M. (2008). Making the break count: An episodic examination of recovery activities, emotional experiences, and positive affective displays. *Academy of Management Journal, 51*(1), 131-146. doi:10.5465/AMJ.2008.30764063

Vallerand, R. J., & Houlfort, N. (2003). Passion at work: Toward a new conceptualization. In S.W. Gilliland, D. D. Steiner, & D. P. Skarlicki (Eds.), *Emerging perspectives on values in organizations* (pp. 175-204). Greenwich, CT: Information Age Publishing.

van Beek, I., Hu, Q., Schaufeli, W. B., Taris, T. W., & Schreurs, B. H. J. (2012). For Fun, Love, or Money: What Drives Workaholic, Engaged, and Burned-Out Employees at Work? *Applied Psychology-An International Review-Psychologie Appliquee-Revue Internationale, 61*(1), 30-55. doi:10.1111/j.1464-0597.2011.00454.x

Volpone, S. D., Perry, S. J., & Rubino, C. (2013). An exploratory study of factors that relate to burnout in hobby jobs. *Applied Psychology, 62*(4), 655-677. doi:10.1111/j.1464-0597.2012.00502.x

Table 1

Fit Indices for Latent Growth Class Models of Exhaustion for Different Number of Trajectories

No. of Classes	No. of free parameters	AIC	BIC	BLRT (p value)	Entropy	Latent class proportions (%)
1	6	2270.22	2292.42			100
2	9	2227.58	2260.89	.00	.72	19/81
3	12	2212.76	2257.16	.00	.77	75/08/17
4	15	2191.40	2246.90	.00	.81	10/15/04/71
5	18	2186.04	2252.65	.02	.82	17/67/05/07/03

Note. *N* = 299. AIC = Akaike's information criterion; BIC = Baysian information criterion; ABIC = adjusted Baysian information criterion; BLRT = Bootstrap Likelihood Ratio Test

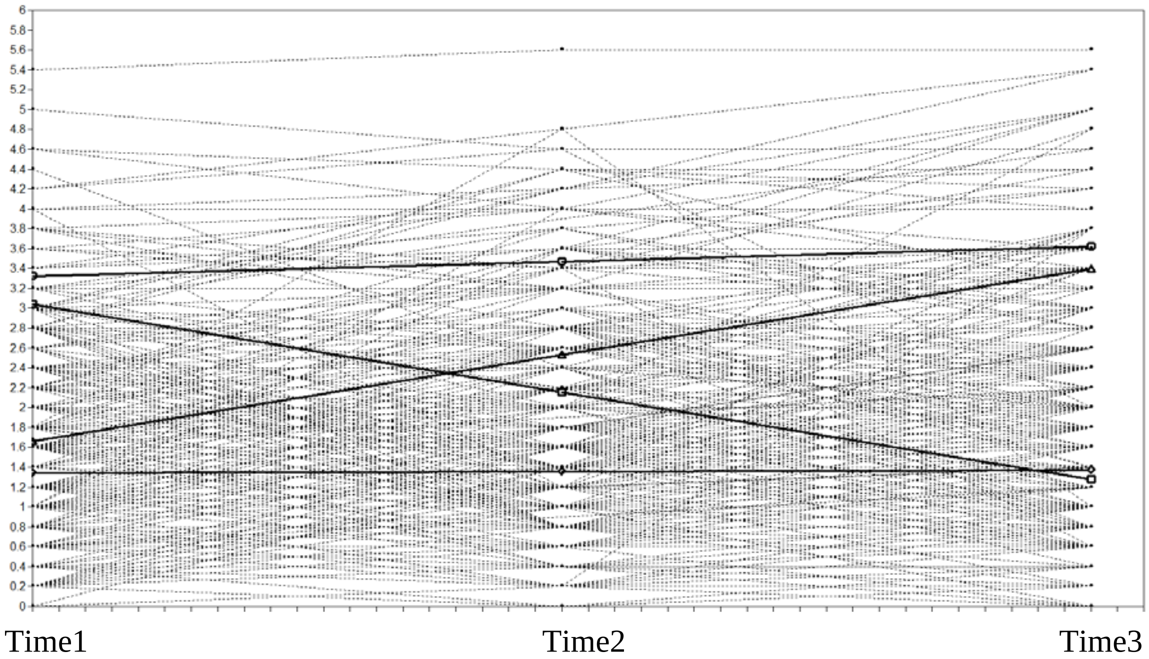

Figure 1. Estimated Mean and Individual Trajectories for Latent Classes of Exhaustion.

Note. Trajectory # 1: *High*, *n* = 29 (10%); Trajectory # 2: *Increase*, *n* = 44 (15%); Trajectory # 3: *Decrease*, *n* = 13 (4%); Trajectory # 4: *Low*, *n* = 213 (71%).

Table 2

Descriptive Statistics for Covariates for the Latent Trajectory Classes of Exhaustion at T1 and T3

Covariate	Class#1 High *n* = 29	Class#2 Increase *n* = 44	Class#3 Decrease *n* = 13	Class#4 Low *n* = 213
Workload T1	5.41 (.93)	4.76 (.91)	5.10 (.97)	4.30 (1.06)
WHI T1	2.68 (.43)	2.57 (.47)	2.74 (.54)	2.25 (.41)
Psych detach T1	2.79 (1.20)	2.15 (.87)	2.75 (1.21)	2.90 (1.23)
Relaxation T1	3.92 (1.22)	4.13 (1.22)	4.69 (1.47)	4.58 (1.18)
Intrinsic Regulation T1	6.09 (.90)	6.24 (.77)	6.31 (.85)	6.47(.64)
Identified regulation T1	6.29 (.60)	6.41 (.63)	6.59 (.68)	6.30 (.70)
Introjected Regulation T1	4.97 (1.05)	5.11 (1.45)	5.17 (.93)	4.83 (1.30)
External regulation T1	4.10 (1.27)	3.59 (1.66)	4.23 (1.71)	3.45 (1.50)
Workload T3	5.49 (.65)	5.40 (.80)	3.90 (1.07)	4.18 (1.09)
WHI T3	2.76 (.45)	2.91 (.40)	2.42 (.55)	2.23 (.47)
Psych detach T3	2.40 (1.01)	1.84 (.87)	3.19 (1.37)	2.93 (1.33)
Relaxation T3	3.78 (1.28)	3.31 (1.29)	5.06 (1.55)	4.55 (1.26)
Intrinsic Regulation T3	5.79 (1.07)	5.71 (1.17)	6.10 (.91)	6.32 (.74)
Identified regulation T3	6.20 (.84)	6.13 (.92)	6.64 (.91)	6.24 (.75)
Introjected Regulation T3	5.48 (.93)	5.40 (1.28)	5.42 (1.24)	5.08 (1.23)
External regulation T3	4.15 (1.43)	3.68 (1.78)	3.85 (1.51)	3.60 (1.48)

Table 3

Predictors of Membership in the Latent Trajectory Classes of Exhaustion (C1 = high / C2 = increase / C3 = decrease / C4 = low)

	Contrast of Exhaustion Classes											
Covariate	1 vs 4		2 vs 4		3 vs 4		1 vs 3		2 vs 3		1 vs 2	
	Coeff	OR	Coeff	OR	Coeff	OR	Coeff	OR	Coeff	OR	Coeff	OR
Workload T1	1.12**	3.05	0.44*	1.55	0.78*	2.18	0.34	1.40	-0.34	0.71	0.67	1.94
WHI T1	2.29**	9.89	1.73**	5.63	2.56*	12.88	-0.26	0.77	-0.83	0.44	0.54	1.71
Psychological detachment T1	-0.08	0.92	-.70**	0.50	-0.11	0.90	0.03	1.03	-0.59	0.56	0.62*	1.86
Relaxation T1	-0.45*	0.64	-0.31*	0.73	0.08	1.08	-0.53	0.59	-0.39	0.68	-0.14	0.87
Intrinsic regulation T1	-0.65*	0.52	-0.43	0.65	-0.33	0.72	-0.32	0.73	-0.10	0.91	-0.22	0.81
Identified regulation T1	-0.07	0.93	0.25	1.29	0.93	2.54	-1.00	0.37	-0.68	0.51	-0.32	0.73
Introjected regulation T1	0.09	1.10	0.18	1.20	0.22	1.25	-0.13	0.88	-0.04	0.96	-0.09	0.92
External regulation T1	0.29*	1.34	0.06	1.07	0.35	1.42	-0.06	0.94	-0.29	0.75	0.23	1.26
Workload T3	1.51**	4.53	1.41**	4.11	-.23	.80	1.74**	5.70	1.64**	5.18	0.10	1.10
WHI T3	2.43**	11.41	3.09**	22.07	0.87	2.38	1.57*	4.79	2.26*	9.26	-0.66	0.52
Psychological detachment T3	-0.35*	0.71	-1.06**	0.35	0.14	1.15	-0.48*	0.62	-1.20**	0.30	0.72*	2.05
Relaxation T2	-0.45*	0.64	-0.72**	0.49	0.45	1.57	-0.90*	0.41	-1.17*	0.31	0.27	1.31
Intrinsic regulation T3	-0.66*	0.52	-0.73**	0.48	-0.33	0.72	-0.34	0.72	-0.40	0.67	0.07	1.07
Identified regulation T3	-0.08	0.92	-0.19	0.82	1.05*	2.86	-1.13*	0.32	-1.24*	0.29	0.11	1.12
Introjected regulation T3	0.30*	1.35	0.23	1.26	0.25	1.28	0.048	0.78	-0.20	0.98	0.07	1.07
External regulation T3	0.24	1.28	0.03	1.03	0.10	1.11	0.14	1.15	-0.07	0.93	0.21	1.23

*$p < 0.05$;** $p < 0.01$. Coeff = Coefficient; OR = Odds ratio

Appendix A

Footnote 2

In estimating the number of different trajectories using LGCA, it is possible to use Full Information Maximum Likelihood (FIML) in Mplus on the complete dataset (*N* = 467). This method makes use of all available data in the longitudinal data set, and is currently considered the best approach for handling missing data that are either MCAR or MAR (Enders, 2011). Although the problem arises when doing further analysis to explore how the workload-related variables and motivational regulations are associated with the different trajectories at T1 and T3. First, as there are missing data in the associated variables at both T1, but most at T3, there would be a large variance in *N* when conducting the multinomial logistic regression analysis for each variable. Second, testing for differences between the trajectories with predictive variables using multiple imputations to handle the missing data in Mplus is not an option, because the results of logistic regression odd ratio analysis with confidence interval is not available for multiple imputed data in Mplus (Muthén & Muthén, 2012). Further, the consequence of eliminating those coaches who did not respond at all three time points is a loss of power and a possible risk that the results would not give an adequate picture of the number of trajectories for exhaustion for the total coach population of *N* = 467. Therefore, LGCA using FIML to handle the missing data was applied to both data set (N = 467 and *n* = 299) to test whether the results of the number of trajectories would differ. The results indicated that the number of trajectories and their development were the same for the two datasets. The results of the LGCA of *n*= 461 could be found in Table A. *n* = 6 did not have complete data on exhaustion at T1, T2, and T3, and the analysis is therefor based on *n* = 461.

Table A

Fit Indices for Latent Growth Class Models of Exhaustion for Different Number of Trajectories

No. of Classes	No. of free parameters	AIC	BIC	BLRT (p value)	Entropy	Latent class proportions (%)
1	6	2985.53	3010.33			100
2	9	2924.11	2961.31	.00	.64	20/80
3	12	2899.55	2949.15	.00	.71	78/14/8
4	15	2868.38	2930.38	.00	.75	73/13/11/03
5	18	2862.96	2937.36	.01	.74	03/03/09/72/13

Note. *n* = 461. AIC = Akaike’s information criterion; BIC = Baysian information criterion; ABIC = adjusted Baysian information criterion; BLRT = Bootstrap Likelihood Ratio Test

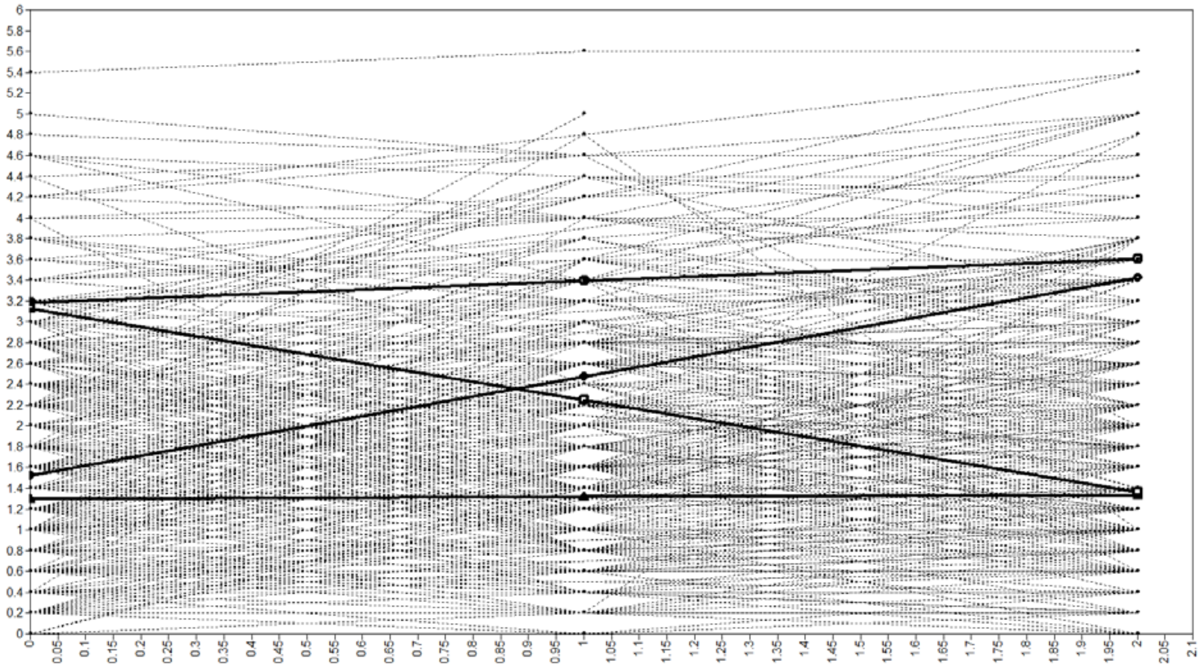

Figure B. Estimated Mean and Individual Trajectories for Latent Classes of Exhaustion. Trajectory # 1: *Low*, *n* = 335 (73%); Trajectory # 2: *Increase*, *n* = 50 (11%); Trajectory # 3: *Decrease*, *n* = 15 (4%); Trajectory # 4: *High*, *n* = 61 (13%).

Figure B illustrates the results of growth over the season for the four different exhaustion trajectories. Trajectory 1 consist of 335 participants (73%) and is labeled "*Low*" (Intercept: *M* = 1.30, *SE* = .07, *p* = .000; Slope: *M* = .02, *SE* = .02, *p* = .45). Trajectory 2 consist of 50 participants (11%) and is labeled "*Increase*" (Intercept: *M* = 1.53, *SE* = .27, *p* = .000; Slope: *M* = .95, *SE* = .14, *p* = .000). Trajectory 3 consist of 15 participants (3%) and is labeled "*Decrease*" (Intercept: *M* = 3.13, *SE* = .32, *p* = .000; Slope: *M* = - .88, *SE* = .12, *p* = .000). Trajectory 4 consist of 61 participants (13%) and is labeled "*High*" (Intercept: *M* = 3.18, *SE* = .30, *p* = .000; Slope: *M* = .21, *SE* = .14, *p* = .12).