



Six-month stability of individual differences in sports coaches' burnout, self-compassion and social support

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ABSTRACT

Using a three-wave prospective cross-lagged panel design, the study examined six-month stability of burnout, self-compassion and social support among sports coaches in terms of measurement invariance, mean-level change, rank-order stability, and structural stability. The participating coaches ($N = 422$; $M_{\text{age}} = 44.48$, $SD = 11.03$) completed an online questionnaire measuring self-compassion, social support, coach burnout and demographics at baseline and two follow-ups at three months and six months. The various forms of stability were assessed using structural equation modeling. There was no significant mean-level change in burnout, self-compassion, or social support, and all three constructs exhibited measurement invariance. Rank-order stability remained relatively high, ranging from 0.78 to 0.94 across the three time points. For all three constructs, covariances between latent factors were invariant over time, indicating high structural stability. While self-compassion and social support were positively related, both were negatively related to coach burnout. These results confirm the importance of preventing and addressing symptoms of burnout, low self-compassion and poor social support in sports settings.

1. Six-month stability of individual differences in sports coaches' burnout, self-compassion and social support

It is widely accepted that sports coaching is a demanding occupation (Fletcher & Scott, 2010; Frey, 2007; Levy et al., 2009), involving stressors that include long and irregular working hours (Altfeld et al., 2018), insecure employment based on athletic performance (Bentzen et al., 2020), work-family conflicts (Pawsey et al., 2021; Potrac et al., 2017), and high emotional investment in the coaching profession (McNeill et al., 2017). Given the emotional strain of accumulated stress, some coaches are likely to experience negative mental health outcomes like burnout (Apostolidis, 2012; Kegelaers et al., 2021; Kelley, 1994; Malinauskas et al., 2010; Schaffran et al., 2016), which may lead them to quit their job (Olusoga & Kentta, 2017; Raedeke, 2004). However, not all coaches experience negative mental health effects (Raedeke et al., 2000), depending partly on risk and protective factors. Previous

research has placed much greater emphasis on the former than the latter (Olusoga et al., 2019). Known protective factors include grit (Moen & Olsen, 2020), psychosocial resilience (Wagstaff et al., 2018), and coping skills (Olusoga et al., 2014), as well as self-compassion (Hägglund et al., 2021) and social support (Malinauskas et al., 2010). These last two factors have recently attracted increasing research interest because they are thought to enhance well-being and coping (Freeman, 2021; Knights & Ruddock-Hudson, 2016; Mosewich, 2020; Mosewich et al., 2019; Pacewicz et al., 2019; Thoits, 2011; Zessin et al., 2015).

Most of the research on self-compassion and social support in sports settings is cross-sectional and does not address the issue of coach burnout. For that reason, we adopted a longitudinal approach to examine the nature of burnout, self-compassion, and social support in coaching settings across six months. In particular, we sought to investigate the stability of these constructs and the relationships between them as a foundation for future basic research (e.g., differential change

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in the constructs) and applied research (e.g., interventions to reduce burnout by promoting self-compassion and social support). The present study also addresses the question of whether we can expect natural change, and if so, what kind of change (i.e., how will a particular construct evolve?). For example, if a known protective factor for mental health remains stable over time, it can reasonably be regarded as a relatively stable resource that a coach can depend on in the future. Conversely, where there is a deficit, an intervention to promote the resource may be indicated. It is important to note that high natural stability does not mean that a self-reported inner state cannot be influenced by an intervention – only that it is unlikely to change without intervention. Inter-individual differences in this regard imply that it is possible to work with someone who, for example, reports a lack of social support. Another reason to investigate natural stability and change is that the relationships between constructs may also change; for example, does the potential protective relationship between social support and burnout persist or weaken over time?

Examining constructs such as burnout, self-compassion, and social support longitudinally, we can distinguish between different perspectives of change and stability (Nesselroade, 1991, 2001). The present study addresses three statistically and conceptually distinct types of stability: mean-level stability, rank-order stability, and structural stability (Allemand et al., 2007). *Mean-level change* implies that the average level of a construct changes over time; *rank-order stability* implies that individuals can keep their relative standing on a construct relative to others over time, commonly measured by test-retest correlations; and *structural stability* refers to stability of the pattern of correlations among constructs. High structural stability implies that these associations between constructs do not change over time. It is important to differentiate between these three types of stability because, for example, a group's mean-level trend may differ from its rank-order stability. If a group's members maintain the same relative positions over time, rank-order stability is high; at the same time, the population-level mean is independent of rank-order stability and may increase or decrease over time (Asendorpf, 2021). To interpret these types of stability in a meaningful way, it is first necessary to establish longitudinal measurement invariance. Stability and change can only be unambiguously interpreted as a reflection of a change process when items of a questionnaire do not change connotation or contribution to the construct over time (e.g., Meredith & Horn, 2004; Widaman et al., 2010).

1.1. Coach burnout, self-compassion and social support: mean-level and rank-order stability

Coach burnout can be described in terms of three main dimensions (Raedeke & Smith, 2001): *emotional and physical exhaustion* as a result of prolonged exposure to work-life stress (the core dimension of burnout); *sports devaluation* or the extent to which a coach stops caring about their sport and their role as a coach; and *reduced sense of personal accomplishment*, referring to the self-evaluative component of perceived lack of achievement at work (Raedeke et al., 2000).

To date, only one study (Raedeke, 2004) has assessed the stability of coach burnout and observed a rank-order stability coefficient of $r = 0.66$ over a period of one year.¹ In a recent study of Swiss elite athletes, Gerber et al. (2018) reported rank-order stabilities of $r_s = 0.57$ to 0.65 for burnout over a period of six months. Beyond sport settings, studies of early-career Finnish workers and Swedish teachers have reported rank-order stability coefficients of $r_s = 0.49$ to 0.72 (Evolahiti et al., 2013; Hultell et al., 2013; Jumat et al., 2020; Roskam et al., 2021; Tóth-Király et al., 2021) for periods ranging from three months to nine years.

The term *self-compassion* refers to one's compassion and benevolence

toward oneself when confronted with failings or difficulties (Neff, 2015). Self-compassion can be conceptualized in terms of three bipolar dimensions: (1) *self-kindness versus self-criticism*: how warm-hearted, caring, and understanding or how self-critical one is when confronted with setbacks, failures, or other challenges; (2) *common humanity versus isolation*: the extent to which one accepts that failure, inadequacies, and mistakes are part of the human nature rather than an isolated “that only happens to me” approach; and (3) *mindfulness versus over-identification*: the extent to which one is aware of and accepts negative feelings and experiences for what they are rather than over-identifying with thoughts and feelings of suffering or becoming absorbed in one's reaction to this negative emotion (Neff, 2003a; 2003b).

In a study of female US athletes over a short time span of five days (pre- and post-competition), Killham et al. (2018) reported a rank-order stability of $r = 0.81$; to our knowledge, there are no other empirical data on the stability of self-compassion in coaches (or athletes). In other studies of adult depressive outpatients and US college students, self-compassion exhibited rank-order stabilities between $r = 0.51$ and $r = 0.80$ over periods ranging from 12 months to four years (Donald et al., 2018; Krieger et al., 2016; Stutts et al., 2018). In a sample of Chinese adolescents, self-compassion exhibited a lower rank-order stability of $r = 0.34$ over a three-year period (Yang et al., 2021).

Social support refers to the perceived availability of support and global satisfaction with the support provided by interpersonal relationships (Knoll et al., 2017), comprising structural components (e.g., network characteristics, number and type of relations) and functional components (e.g., emotional, esteem-related, informational, and tangible support; Barrera, 2000; Uchino, 2004; Wills & Shinar, 2000). Functional support is often further divided into received support and perceived availability of support (Sarason et al., 1990; Vangelisti, 2009); the latter is more consistently linked to beneficial health outcomes (Barrera, 2000; Uchino, 2004; Wills & Shinar, 2000).

To our knowledge, there are no empirical data on the stability of received or perceived social support among coaches or athletes, but researchers in personality and developmental psychology have reported rank-order stability scores in perceived social support between $r = 0.44$ and 0.73 over a four-year timespan (Udayar et al., 2020; Weiss et al., 2021). In a meta-analysis, Wang et al. (2021) reported a comparable rank-order stability in perceived support of $r = 0.55$ over an average timespan of 0.72 years. In a study of perceived social support in a population of middle-aged adults, Allemand et al. (2015) reported a rank-order stability of $r = 0.62$ over a period of eight years. They found no difference in the mean-level change of perceived social support, suggesting that social support was relatively stable over time.

While burnout, self-compassion, and social support are typically conceptualized and measured as relatively stable individual differences constructs, they may fluctuate in different situations and over time. As the stability of these constructs among coaches remains unclear, the present study looked at changes over a six-month period to better capture any contextual changes during that time (e.g., beginning or end of season, different competitions) and because there is some empirical evidence that relevant changes may occur over this timespan (Gerber et al., 2018; Stutts et al., 2018; Wang et al., 2021). There are reasons for both stability and change with respect to burnout, self-compassion and social support among coaches. Factors that tend to have a stabilizing effect in the context of coaches would be certain aspects of personality (e.g., emotional stability) and a settled environment (e.g., same employer over a long period) while other aspects of personality (e.g., openness to experience, self-reflection) and environmental factors (e.g., relationship status, integration of new players) are likely to contribute to instability or change in coach burnout, self-compassion, and social support (e.g., Cook et al., 2021; Oglesby et al., 2020).

In summary, while previous findings suggest that burnout, self-compassion, and social support are mostly modestly stable, with inter-individual differences in stability, there is also evidence of differences in stability ranging from modest to high. However, there are almost no data

¹ r values of < 0.3 are usually interpreted as low, 0.3 – 0.5 as moderate and > 0.5 as high (Cohen, 1988)

on these effects among sports coaches, especially in terms of both mean-level and rank-order stability. Indeed, to our knowledge, the mean-level stability of burnout, self-compassion, and social support has rarely been investigated in a sports setting, other than in a few cases in areas other than sport (e.g., Allemand et al., 2015; Hultell et al., 2013). As it may prove problematic to transfer findings from other domains to sports settings (Lundkvist et al., 2014), a dedicated study of sports coaches seems the better option.

1.2. Associations between coach burnout, self-compassion and social support

Burnout and self-compassion may be negatively related because, for instance, self-compassion enhances resilience to stress (Bluth & Neff, 2018) and may buffer burnout. In contrast, people low in self-compassion may be more self-critical and this may result in increased burnout (Amemiya & Sakairi, 2020), or because burnout increases self-criticism (Chen & Kao, 2013) and therefore undermines self-compassion. Several cross-sectional studies have shown that self-compassion is negatively associated with burnout in helping professions and among physicians, students, clergy, and war veterans (e.g., Atkinson et al., 2017; Barnard & Curry, 2012; Gracia-Gracia & Oliván-Blázquez, 2017; Wörfel et al., 2014). To our knowledge, however, the relationship between burnout and self-compassion has not yet been investigated in sports coaching settings.

Coach burnout and social support may be negatively related because poor social support or social network strain tend to be associated with increased stress and potential burnout (Norris et al., 2017). The other way round, burnout may lead to social withdrawal, undermining social support (Price & Weiss, 2000). Empirical findings show that social support is associated with lower levels of stress appraisal and, in turn, with lower coach burnout (Apostolidis, 2012; Apostolidis & Karabatsos, 2012; Hendrix et al., 2000; Kelley, 1994; Kelley & Gill, 1993; Martin et al., 1999). In addition, support from friends, coaching colleagues, and family tend to be negatively associated with coach burnout (Hendrix et al., 2000). In short, the relationship between coach burnout and social support is empirically well established, but previous research was primarily cross-sectional.

Self-compassion and social support may be positively related because a supportive environment can help develop greater self-compassion (Ingstrup et al., 2017; Neff, 2003a) or because self-compassion makes it easier to build and maintain social relationships (Neff & Beretvas, 2013), so enhancing social support. To date, limited cross-sectional research has identified a positive relationship between social support and self-compassion in athletes (Jeon et al., 2016) and students (Dupasquier et al., 2020; Neely et al., 2009), but we are unaware of any studies exploring the relationship between social support and self-compassion in coaches.

Overall, existing theoretical considerations and empirical studies suggest that burnout, self-compassion, and social support are likely to be interrelated. Among coaches, however, only the association between burnout and social support is well established, and as far as we know, there are no existing data on the structural stability of these relationships. For that reason, there is a need for longitudinal data to assess the stability of any links between self-compassion, social support, and coach burnout over time in coaches.

1.3. The present study

The overarching aim of this longitudinal study was to examine stability and change in coach burnout, self-compassion, and social support in a large sample of coaches over a period of six months. To that end, the three constructs were measured three times, at intervals of three months. This timeframe was designed to capture the longitudinal interplay between the variables of interest rather than their daily or weekly fluctuations. The study had three specific objectives: First, we

sought to establish longitudinal measurement invariance of the measures of burnout, self-compassion and social support measures over time to ensure that the constructs are comparable. Second, we sought to assess stability and change in burnout, self-compassion, and social support over time in terms of mean-level change and rank-order stability. Finally, we examined the structural stability of the associations between burnout, self-compassion, and social support.

2. Method

2.1. Participants

A sample of 422 sports coaches (20.7% female) was recruited in Switzerland through the national professional association of coaches, the national coach education and the national department for youth and adult sport. The participants' mean age was 44.48 years ($SD = 11.03$, $range = 21-78$); of these, 32% coached competitive sports at adult level; 54% coached competitive junior-level sports; and 14% coached recreational sports. Participants came from a wide range of individual and team sports (57 disciplines), including soccer (18%), ice hockey (9%), athletics (7%), alpine skiing (6%), tennis (6%), handball (6%), and swimming (5%).

2.2. Procedure

The study adhered to ethical standards and was approved by the university's Institutional Review Board (internal ethics committee). A link to the online survey was sent to potential participants through the institutions mentioned above. As well as being informed about the purpose of the study and confidentiality provisions, they were told that participation was voluntary and that they could withdraw without explanation at any time. After giving consent, participants completed online questionnaires at baseline (T1) and at three and six months (T2 and T3, respectively), answering the same set of questions at each time point. Demographic items (age, gender, sport, level) were recorded only at T1. Twelve weeks after each time point, participants received an email containing a link to the next assessment. Participants were asked to complete the survey within one week and received one e-mail reminder if they failed to do so. These self-report data were collected for 420 participants at T1; two coaches completed the survey at T2 and T3 only. At T2, 301 participants (71% of the total sample) completed the questionnaire, and 259 participants (61% of the total sample) completed at T3. Participants who participated at all three measurement time points did not differ in burnout, self-compassion, and social support from those who participated at only one or two measurement time points (all $t_s < 1.83$, all $p_s > 0.07$, all $d_s < 0.18$).

2.3. Measures

2.3.1. Coach burnout

To measure coach burnout, we used the 15-item Coach Burnout Questionnaire (CBQ; Harris et al., 2005), which is adapted from the Athlete Burnout Questionnaire (Raedeke & Smith, 2001) and addresses three dimensions of a coach's experiences: emotional and physical exhaustion, sport devaluation, and reduced sense of accomplishment in a sport-specific context (e.g., "It seems that no matter what I do, I don't coach as well as I should"). Items were rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). Higher scores reflect more coach burnout. On the basis of psychometric evaluations and theoretical considerations, Lundkvist et al. (2014) recommended the use of the CBQ to assess sport-specific coach burnout (for details of discriminant and convergent validity, see Lundkvist et al., 2014). As burnout is thought to be a syndrome, Raedeke and Smith (2004) combined the three dimensions as one latent factor by calculating the mean of the 15 items (Items 1 and 14 are reverse-coded). The internal consistency of the total scale score was good at T1 ($\alpha = 0.88$), T2 ($\alpha = 0.87$), and T3 ($\alpha = 0.88$).

2.3.2. Self-compassion

To assess self-compassion, we used the Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011). Comprising 12 items (e.g., “I try to be understanding and patient towards those aspects of my personality I don’t like”; “I try to see my failings as part of the human condition”), the SCS-SF is an adaptation of the original 26-item Self-Compassion Scale. It shows high internal consistency and correlates almost perfectly with the original 26-item Self-Compassion Scale (Neff, 2003b). Further, studies have shown good validity for the SCS (Huysmans & Clement, 2017; Raes et al., 2011). As Raes et al. (2011) recommended the use of an overall self-compassion index, negative subscale items were reversed, and the mean of all subscale scores was calculated to obtain an overall score for self-compassion. Items were rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). Higher scores reflect that a coach is more self-compassionate. Internal consistency of the total scale score was adequate at T1 ($\alpha = 0.73$), T2 ($\alpha = 0.77$), and T3 ($\alpha = 0.77$).

2.3.3. Social support

To measure social support, we used the Brief Perceived Social Support Questionnaire (BPSSQ; Kliem et al., 2015), a 6-item instrument developed to assess perceived social support (e.g., “I receive a lot of understanding and security from others”). It has been shown that the BPSSQ is a valid measure of general social support (Kliem et al., 2015; Lin et al., 2019). Items were rated on a 5-point scale ranging from 1 (*not true at all*) to 5 (*very true*); higher scores reflect higher levels of perceived social support. The overall index was built by calculating the mean of all items. Internal consistency of the scale was good at T1 ($\alpha = 0.85$), T2 ($\alpha = 0.85$), and T3 ($\alpha = 0.85$).

2.4. Statistical analyses

2.4.1. Longitudinal measurement model

To address our research questions, we used longitudinal structural equation modeling (SEM; Grimm et al., 2016), beginning with a longitudinal measurement model of three correlated latent factors (self-compassion, burnout, and social support) at the three time points (T1 to T3). For each of these latent variables, we used the item-to-construct balance technique (Little et al., 2002) to create parcels (i.e., aggregate-level indicators based on the average of several items) as manifest indicators rather than using single items. The models were identified and scaled using the marker variable procedure, setting the loading of the manifest reference variable to 1, with the intercept of this reference variable fixed at 0. For the matching parcels, we allowed for correlated residual variances at T1 to T3 (Marsh & Hau, 1996).

2.4.2. Longitudinal measurement invariance

To determine whether the three measures behaved in equivalent fashion across the three time points, we assessed the longitudinal measurement invariance (MI) of the three-factor model (Widaman et al., 2010). Tests of longitudinal MI typically include fitting confirmatory factor models with increasingly severe restrictions: a configural model without additional parameter constraints (M1); a weak MI model (M2) with equal factor loadings over time; a strong MI model (M3) with equal factor loadings and item intercepts over time; and a strict MI model (M4) with equal factor loading, equal item intercepts, and equal item residual variances over time. While comparison of factor correlations requires only weak MI, comparison of factor means over time requires strong MI. The strictest form of invariance implies that all differences in means, correlations, and variances of the observed indicators across time points reflect differences in latent variables or factors.

2.4.3. Longitudinal structural invariance/stability

To examine whether associations between the three latent constructs (i.e., self-compassion, burnout, and social support) were stable or differ across the three time points, we tested for longitudinal structural invariance of the three-factor model by comparing a model with equal

covariance of the latent constructs over time against a model in which associations were freely estimated over time (M5).

2.4.4. Longitudinal stability and change

To examine whether the constructs were stable or changeable across the three time points, we tested two competing models. We began with a second-order no-growth model (M6; Grimm et al., 2016) based on longitudinal measurement invariance, with three manifest indicators (parcels) per latent factor across all time points, implying no mean changes in the three constructs over time. For all lower-order factors (latent constructs at T1 to T3), we fixed the item intercepts at 0 across all time points; for the higher-order models, we specified an intercept (level) factor. We then tested a second-order latent growth model (M7; Grimm et al., 2016) based on longitudinal measurement invariance with three manifest indicators (parcels) per time point for all factors simultaneously. In addition to the intercept (level) factors, we specified linear slope (change) factors to determine whether the constructs were stable or changeable over time. For the linear growth model, we fixed the slope (change) factor loadings to 0, 1, and 2, corresponding to linear growth. Individual differences in construct levels would be indicated by significant variance in the intercept while individual differences in change (differences in the rates of change) would be indicated by significant variance in the slopes.

All analyses were performed in Mplus 8 (Muthén & Muthén, 1998–2017) using maximum likelihood (ML) estimation. To assess model goodness of fit, we used chi-square (χ^2), comparative fit index (CFI), and root mean square error of approximation (RMSEA) statistics, including 90% confidence intervals (CIs). In general, CFI values above 0.95 and RMSEA values below 0.06 indicate that a model is adequately parameterized and of good fit, although values above 0.90 and below 0.08, respectively, are acceptable (Browne & Cudeck, 1992; Hu & Bentler, 1998). Model comparisons were performed using nested chi-square ($\Delta\chi^2$) tests; comparison of RMSEA CIs is an effective alternative method of assessing the relative model fit of nested models. Moreover, changes in the CFI and RMSEA of less than 0.01 and 0.015, respectively, represent a trivial difference in model fit (Chen, 2007; Cheung & Rensvold, 1999).

3. Results

3.1. Descriptive statistics

Table 1 presents descriptive statistics and sample sizes for the study variables. Overall, coaches were affected by burnout to a low to moderate degree. These findings are comparable to average levels of burnout among coaches found in other studies (Harris et al., 2005; Malinauskas et al., 2010). The results further showed that coaches reported moderate to high levels of self-compassion and social support, which is slightly higher than in comparable studies (e.g., Ferguson et al., 2015; Hartley & Coffee, 2019; Lizmore et al., 2017). Skewness values and kurtosis values were in the acceptable range according to cut-off values (Hair et al., 2010).

3.2. Longitudinal measurement invariance

Table 2 shows model fit indices based on tests of longitudinal measurement invariance (MI) for the three-factor model (M1 to M4). The most restrictive model of strict MI achieved good model fit. Although model comparison using the chi-square difference ($\Delta\chi^2$) test indicates a statistically significant difference from the less restrictive model, two indicators suggest that these reflect trivial differences in model fit. As CFI and RMSEA changes were less than 0.01 and 0.015, respectively, and there were substantial overlaps in RMSEA 90% CIs, we concluded that strict measurement invariance holds over time and adequately captures the data. Table 3 shows stability correlations among the latent factors and means of the latent factors based on strict measurement

Table 1
Descriptive Statistics of the Variables on the Three Time points.

	T1			T2			T3		
	n	M	SD	n	M	SD	n	M	SD
Self-compassion	420	3.54	0.50	301	3.48	0.52	259	3.55	0.52
Burnout	420	1.95	0.56	301	1.96	0.53	259	1.94	0.54
Social support	420	4.17	0.69	301	4.20	0.71	259	4.22	0.68

Note. The variables consist of mean scale scores with a range from 1 to 5. Two coaches completed the survey at T2 and T3 only.

Table 2
Goodness of fit indices for the evaluation of longitudinal measurement invariance (models M1 to M4) and second-order latent No-growth and growth models (models M5 and M6).

Model	χ^2	df	CFI	RMSEA (90% CI)	Δ Model	$\Delta\chi^2$	Δ df
M1: Configural invariance	363.18*	263	.985	.030 (.022; .037)	–	–	–
M2: Weak invariance	370.27*	275	.986	.029 (.021; .036)	2–1	7.09	12
M3: Strong invariance	387.19*	287	.985	.029 (.021; .036)	3–2	16.92	12
M4: Strict invariance	429.29*	305	.982	.031 (.024; .038)	4–3	42.10*	18
M5: Structural invariance	437.56*	311	.981	.031 (0.24; 038)	5–4	8.27	6
M6: No growth	519.46*	341	.973	.035 (.029; .041)	–	–	–
M7: Linear growth	482.81*	323	.976	.034 (.028; .040)	–	–	–
M7 ⁺ : Linear growth modified	518.39*	338	.973	.036 (.029; .042)	–	–	–

Note. M1 to M4 = longitudinal measurement invariance models; M5 = longitudinal structural invariance; M6 = no growth model/random intercept only model; M7 = linear growth model; M7⁺: The model M7 was modified (i.e., the non-significant negative slope variance for burnout and social support and the non-significant slope variance for self-compassion were set to zero, indicating no individual differences in change). χ^2 = chi-square test statistic (ML estimator); df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; 90% CI = 90% confidence intervals for RMSEA; Δ Models = comparison of models; $\Delta\chi^2$ = chi-square difference test; Δ df = difference in degrees of freedom. * $p < .001$.

Table 3
Stability correlations and estimates means of the latent factors (model M4).

	Self-compassion	Burnout	Social support
r_{T1-T2}	.88	.84	.78
r_{T2-T3}	.94	.86	.82
r_{T1-T3}	.87	.81	.89
M_{T1} (SE)	3.43 (0.03)	1.90 (0.03)	4.03 (0.04)
M_{T2} (SE)	3.37 (0.03)	1.93 (0.03)	4.05 (0.04)
M_{T3} (SE)	3.44 (0.03)	1.92 (0.03)	4.05 (0.04)

Note. SE = standard errors; all correlations are significant at $p < .001$.

invariance models (M4). The results indicate relatively high levels of rank-order stability across time points, ranging from $r = 0.78$ to 0.94 .

3.3. Longitudinal structural invariance/stability

Based on the model of strict measurement invariance (M4), we tested a model involving equal covariances of latent constructs across time

points (M5; see Table 2). Compared to model M4, this model exhibited no decrement in model fit as assessed by the chi-square difference ($\Delta\chi^2$) test and fit indices, indicating that the covariances among latent factors are invariant over time. In terms of standardized effects, correlations (r_s) between self-compassion and burnout ranged between -0.44 and -0.45 ($p < .001$); correlations between self-compassion and social support ranged between -0.28 and -0.29 ($p < .001$); and correlations between burnout and social support ranged between -0.30 and -0.31 ($p < .001$). Note that standardized values for parameters constrained to equality are not computed as a single common estimate.

3.4. Second-order latent growth models

Table 2 presents model fit indices for the second-order no-growth model (M6) and the second-order linear growth model (M7). The results for model M7 show a non-significant negative slope variance for burnout and social support and a non-significant slope variance for self-compassion, indicating no individual differences in change. On that basis, we modified M7 by setting the three non-significant slope variances to zero (i.e., random-intercept, fixed-slope). Table 2 also includes model fit indices for the modified model (M7⁺). Table 4 presents parameter estimates from this latent growth model. The results indicate significant individual differences in construct levels across the three time points as indicated by significant variances in the intercepts. For all three constructs, no significant changes were observed over time.

4. Discussion

The present study aimed to examine burnout, self-compassion, and social support in competitive sports coaches over a six-month period. To that end, we tested for measurement invariance of the three scales and investigated mean-level change, rank-order stability, and structural stability of the three constructs. The results showed longitudinal measurement invariance of the measures of coach burnout, self-compassion, and social support. This implies that the questionnaire items did not change connotation or contribution to the construct over time. In other words, the coaches interpreted the items consistently across the three time points, and this is a prerequisite for interpreting stability and change. In addition, the pattern of results points to the relatively high

Table 4
Parameter estimates from the second-order latent growth models (model M7⁺).

	Intercept		Slope		Intercept correlations		
	M (SE)	Var (SE)	M (SE)	Var (SE)	1	2	3
1 Self-compassion	3.41 (0.03)	0.16* (0.02)	0.003 (0.01)	0 ^a	–		
2 Burnout	1.91 (0.03)	0.22* (0.02)	0.01 (0.01)	0 ^a	-.50*	–	
3 Social support	4.03 (0.04)	0.33* (0.03)	0.01 (0.01)	0 ^a	.32*	-.35*	–

Note. SE = standard errors; ^a = the non-significant negative slope variance for burnout and social support and the non-significant slope variance for self-compassion from M7 were set to zero, indicating no individual difference in change. * $p < .001$

stability of coach burnout, self-compassion, and social support across the six-month period, as there were no significant mean-level changes and very high rank-order and structural stability. Our results are consistent with the assumption that self-compassion is related to a “stable feeling of self-worth” (p. 119) rather than to fluctuating self-evaluations (Mosewich et al., 2011; Neff & Vonk, 2009). Further, the results seem consistent with the assumption that burnout appears to be a relatively enduring syndrome once experienced (Raedeke & Kenttä, 2013). The results also support the notion that perceived social support reflects a rather stable attitude of expectation (Brinkmann, 2021).

Since burnout symptoms do not seem to disappear naturally, coaches should actively do something about it. Altfeld et al. (2018) provided some individual approaches to help coaches deal with stress and thereby reduce burnout symptoms. Accordingly, coaches regularly should seek for sufficient physical and psychological recovery. Further, the adaption of soft skills like learning how to deal with own expectations or stress management could be fostered through sport psychologists or on an educational basis (Altfeld et al., 2018; Bentzen et al., 2017). In addition, self-regulatory interventions seem to improve burnout symptoms in coaches (McNeill et al., 2019).

Similarly, as coaches' levels of self-compassion seem to remain stable, those who wish to increase self-compassion should pursue an intervention. To our knowledge, to date there have been no self-compassion interventions with coaches. Researchers may be guided by existing interventions with athletes where moderate-to-strong effects of self-compassion interventions have been found (Mosewich et al., 2013; Röthlin & Leiggener, 2021). Further, qualitative studies indicate that self-compassion in athletes could be fostered through social interactions (Frentz et al., 2020; Ingstrup et al., 2017) or positive experiences with role models (Berry et al., 2010).

Finally, the results suggest that coaches with much social support can assume that this resource will be preserved while inadequate social support remains a risk factor. Social support can be enhanced through the mobilization of the social environment by improving individual social skills, by strengthening the tie to existing social networks members or by altering an individual's attitude towards social support (Cohen, 2004; Gottlieb, 2000). Further studies should seek to evaluate existing or adapting social support interventions in sports settings.

Overall, our results show higher rank-order stability of burnout, self-compassion, and social support during a similar duration than almost all previous studies. The expression of burnout in our sample is comparable to that found in other studies with coaches (e.g., Kilo & Hassmén, 2016; Malinauskas et al., 2010). No firm cutoffs have been established for what constitutes a high level of burnout based on the CBQ. Researchers should therefore be extremely cautious of classifying individuals as having high or low levels of burnout.

While any attempt to explain the observed high level of stability is necessarily speculative, our findings could suggest that coaches of the age of our sample have a clear understanding of their role—that is, they know exactly what is important to them, what their tasks are, and how they wish to behave. As this seems to ensure their relative success, there is little incentive to change anything. In addition, it may also be that our sample has had a very stable social environment during the study period. Both of these factors, clarity of a coaches' role and constant environments (i.e., environmental stability) may have contributed to the stability of self-reported burnout, self-compassion, and social support.

The high observed structural stability indicates that the correlations between the three constructs did not change over time. Put differently, regardless of time, coach burnout was negatively related to self-compassion and social support, which were themselves positively related. These findings are consistent with our assumptions and align with other recent research, indicating that self-compassion and social support may reflect protective factors against burnout over time (Bluth & Neff, 2018; Neff & Beretvas, 2013; Norris et al., 2017). Note that the first assessment was conducted before COVID-19 has spread to Europe; the second and third assessments took place during strict lockdown

policies in Switzerland. These policies came up with an unexpected practice stop for sportspeople of all performance levels as well as the postponement or canceling of various events as for example the Tokyo 2020 Olympic and Paralympic Games. For coaches, this time has meant the reframing of their athlete's goal-settings, re-organizing training structures and methods, creating new routines as well as recognizing the degrees of impact in every single athlete. Again, despite these sometimes-drastic circumstances, the current results provide strong evidence for the relative stability of the constructs and their associations.

Our results have some practical implications. The observed stability of burnout, self-compassion, and social support suggests that these do not change within the selected 6-month timeframe. However, living with burnout for an extended period may cause coaches to leave the profession (Raedeke, 2004) and negatively affect their athletes' well-being (Bissett et al., 2020). In addition, low self-compassion and social support are associated with poor mental health (MacBeth & Gumley, 2012), which suggests that intervention and prevention may be especially important for coaches who exhibit low self-compassion, low social support, and high burnout. This aligns with earlier evidence that interventions can promote changes in burnout (Langan et al., 2015), self-compassion (Ferrari et al., 2019), and social support (Hirani et al., 2018).

5. Limitations and future research

Our study has multiple strengths. The three-wave longitudinal design enabled us to analyze stability and change in coach burnout, self-compassion, and social support. Additionally, the recruitment of a large sample allowed us to test for measurement invariance, which is highly recommended for longitudinal panel designs (Newsom, 2015). The present study also has some limitations that should inform future research. First, when compiling our sample, we did not consider the issue of representativeness, and the sample is very heterogeneous (i.e., different levels of performance, different age groups of athletes coached, different sports), which has both advantages and disadvantages. On the one hand, the sample engages with a broad spectrum of activities at different levels and in various sports; on the other hand, certain sports may be over- or under-represented, so limiting the generalizability of our results. Another critique is that women were underrepresented in our study (20% women). Gender needs more attention in future research, as initial evidence suggests gender differences in social support (e.g., Coventry et al., 2004; Matud et al., 2003). In addition, we did not collect any data on critical life events (e.g., job change, relationship break-up, COVID-related stress) and therefore cannot say anything about their possible influence. Although coaches with higher burnout symptoms did not significantly show a higher attrition rate in this study, it may be that coaches with higher levels of burnout symptoms were less likely to participate. Future studies therefore should include more diverse samples with respect to levels of burnout symptoms and should also investigate reasons for coaches' withdrawal from sport. Another possible limitation concerns the measure of perceived social support. It has been shown that perceived social support is almost consistently linked to beneficial health outcomes, but not so received social support (Barrera, 2000; Brinkmann, 2021; Uchino, 2004; Wills & Shinar, 2000). Future researchers might therefore include measures of perceived and received social support in order to investigate potential differences in these concepts among coaches and the broader sports setting.

The focus of the current study was to examine the stability of coaches' burnout, self-compassion, and social support across six months, and their associations. In general, our results support the view that coach burnout, self-compassion, and social support are correlated. Future research is needed to examine the directions of effects between the three constructs. For example, it could be investigated whether a self-compassion intervention reduces coach burnout. This would be plausible since self-compassion interventions are known to help with

other mental health problems like depression and anxiety (Ferrari et al., 2019). Similarly, it would be useful to explore whether promoting social support reduces burnout, as for example in the case of depression (Eagle et al., 2018). Future research should also examine changes in burnout, self-compassion, and social support during critical life events—for example, when a coach changes job or club, moves to a different location, or experiences a change in relationship or family status. To that end, an ambulatory assessment would be a useful way of monitoring day-to-day changes over a few weeks, “zooming in” more closely than our study design allowed. Equally, future studies could “zoom out” to look at possible changes in coach burnout, self-compassion and social support over several years.

6. Conclusion

The present study extends prior research on how coach burnout, self-compassion, and social support in coaches behave over time. Using longitudinal structural equation modeling, we explored three different types of stability over six-months. Our results show high mean-level and rank-order stability of burnout, self-compassion, and social support, as well as the structural stability of these constructs over the study period. Coach burnout is invariably related negatively to self-compassion and social support, which were in turn positively related. From a practical perspective, these results could suggest that sports associations and health professionals should actively support coaches with high burnout scores, as it cannot be assumed that burnout will disappear naturally within a six-month timeframe.

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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