

Letting Go of Gold: Examining the Role of Autonomy in Elite Athletes' Disengagement from Their Athletic Careers and Well-Being in Retirement

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Retirement from competitive sports significantly influences former athletes' well-being. We propose that disengaging from the former athletic career is a crucial factor in retired athletes' adaptation. Using the theoretical framework of Self-Determination Theory (SDT) we propose that sport motivation at the career peak and motivation for retirement are important determinants of athletes' disengagement progress from a terminated athletic career. We also seek to examine how motivation for retirement and disengagement progress predict retired athletes' well-being. Using a mixed-retrospective/prospective longitudinal design we followed 158 government-supported elite athletes who had recently retired from an athletic career. In two online surveys administered 1.5 years apart, retired athletes reported on motivation, disengagement, and well-being. Results suggested that SDT motivation factors are important predictors for elite athletes career disengagement and well-being in retirement. The clinical implications of these findings for athletic career transition and support programs are discussed.

Keywords: athletic retirement, autonomous motivation, disengagement, well-being

Motivation psychologists have long asserted that “all goals are not created equal” (Ryan, Sheldon, Kasser, & Deci, 1996), highlighting how the reason(s) for goal pursuit impact goal progress, attainment, and well-being. Building upon this

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framework, we propose that all athletic career terminations are not created equal. Some athletes retire from an elite competitive sporting career out of their own volition, wanting, for example, to pursue further education or settle down for a family. By contrast, other athletes feel forced out of their athletic career, retiring out of a sense of pressure and control, following frequent conflicts with the coach, de-selection from the national team, or painful recurring injuries. This study investigated whether athletes retiring for autonomous reasons are more likely to psychologically “let go” of their former athletic career and adjust positively to retirement, whereas athletes retiring for controlled reasons are likely to encounter difficulties distancing themselves from their athletic career and adjust poorly to retirement.

While career termination is a normative and inevitable transition for athletes, it can be met with mixed adjustment outcomes such as “identity disruptions” (Lally, 2007), “career transition distress” (Taylor & Ogilvie, 2001) and decreases in well-being (Stephan, 2003). Although this adjustment does not appear to be problematic for all retiring athletes (Park, Lavallee, & Tod, 2013); there is evidence that some athletes do experience serious adjustment crises when faced with retirement (Alfermann & Stambulova, 2007; Lavallee & Robinson, 2007; Stambulova, 2016; Stambulova, Alfermann, Statler, & Côté, 2009; Webb, Nasco, Riley, & Headrick, 1998). In the athlete retirement literature, many studies have considered the *reason* for retirement as an important predictor of adaptive transitioning. Specifically, studies have found that athletes’ sense of choice over the decision to retire is related to successful adjustment to post-athletic life (Erpič, Wylleman, & Zupančič, 2004; Lally, 2007; Lavallee & Robinson, 2007; Lotysz & Short, 2004; Stambulova, 2016; Stambulova et al., 2009; Webb et al., 1998; Wheeler, Malone, VanVlack, Nelson, & Steadward, 1996). Conversely, involuntary retirement is reported to be more distressing for athletes and is associated with poorer adjustment outcomes (Stambulova, 2016; Webb et al., 1998).

Nevertheless, the current literature does not offer a theoretical background rooted in motivation psychology for why retiring out of a sense of personal choice and identification is more beneficial for athletes’ well-being than retiring because of internal or external pressures (Park et al., 2013). A theoretical background rooted in motivation psychology may be beneficial for the literature to integrate various findings on the subject, improve our prediction of athlete retirement outcomes, and ultimately build more effective interventions for athlete transition/support programs. Self Determination Theory (SDT; Ryan & Deci, 2017), a macro theory of human motivation, may be helpful to address this critical gap, as SDT makes important predictions about the power of autonomous, as opposed to controlled, reasons for action on outcomes such as adaptation, well-being, and goal progress (Ryan & Deci, 2017). In this study, we sought to apply SDT’s autonomous and controlled motivation constructs to understand athletes’ post-retirement adaptation, by examining athletes autonomous and controlled motives for retirement as well as their autonomous and controlled motives for sport engagement.

During the retirement transition, we argue that a key process for athletes’ healthy adaptation is the withdrawal of behavioral effort and psychological commitment from former athletic goal(s). This process of relinquishing effort and psychological commitment from a previously held goal is known in the field of

motivation and life-span psychology as *disengagement* (Wrosch, Scheier, Miller, Schulz, & Carver, 2003), but has thus far not been studied in the context of athletic career termination. The present study seeks to conceptualize healthy adaptation to an athletic career termination as a form of successful disengagement. Moreover, autonomous and controlled motivation for sport engagement and retirement are used as potential determinants of athletes' disengagement progress and post-retirement well-being. As such, we seek to understand the factors that facilitate athletes' retirement and maximize their "post-sport" well-being. The clinical implications for sport transition programs and clinicians working with retiring athletes are discussed.

Athletic Retirement as Disengagement

The last two decades of research have shown that when the ideal time-frame for goal attainment has elapsed, resources needed to pursue a goal become too costly, or new life opportunities conflict with one's existing commitments, the continued pursuit of a goal is likely to erode quality of life (Heckhausen, Wrosch, & Schultz, 2010; Wrosch, Scheier, Carver, & Schultz, 2003). In such circumstances, it becomes adaptive for the person to *disengage*, which means to withdraw behavioral effort and psychological commitment from the problematic pursuit (Wrosch et al., 2003). Following disengagement, adaptive goal adjustment involves goal reengagement (Wrosch et al., 2003), which is the tendency to identify and commit to new goals when unattainable goals are confronted (Carver & Scheier, 2005). In the athletic transition literature, the term "disengagement" was introduced by Koukouris (1991) to describe athlete drop-out experiences, but does not converge with the definition the term denotes in motivation psychology. Numerous studies have shown that disengagement from unattainable or elapsed goals can benefit individuals' subjective well-being (SWB), as well as their mental and physical health (Wrosch, Scheier, & Miller, 2013). SWB captures people's cognitive and affective evaluations of their lives, and is composed of life satisfaction (global judgments of one's life), positive affect (the extent to which one experiences many pleasant emotions), and negative affect (the extent to which one experiences few unpleasant emotions) (Diener, 2000). SWB is considered one of the most important outcome measures in the context of studying adaptation to stressors and major life events (Luhmann, Hofmann, Eid, & Lucas, 2012). For example, late-midlife adults who disengage from important time-framed goals, such as bearing a child or finding a romantic partner, benefit in their SWB and mental health when compared with age-matched individuals who continue to pursue these goals (Heckhausen, Wrosch, & Fleeson, 2001). Researchers have even found disengaging from unattainable goals can benefit biological functioning (e.g., lower cortisol secretion, lower systemic inflammation, and fewer symptoms of illness; Miller & Wrosch, 2007; Wrosch, Miller, Scheier, & De Pontet, 2007).

In the present context, we seek to conceptualize healthy adaptation to athletic retirement as a form of successful disengagement, where athletes relinquish behavioural effort and psychological commitment to their former career. Although no study to date has examined the processes of psychological disengagement in athletic retirement, this goal adjustment process has been studied in other populations of retirees (Farquhar, Wrosch, Pushkar, & Li, 2013; Gagné, Wrosch, &

Brun de Pontet, 2011). While the act of retirement may limit retired athletes' behavioural involvement with the former sport, it does not preclude athletes continued psychological commitment to and identification with the former athletic career (Lavallee, Gordon, & Grove, 1997). Retired athletes may still be cognitively engaged with the sport, may ruminate about past athletic experiences, or feel conflicted and regretful about relinquishing the athletic career (for regret management in retirement see Farquhar et al., 2013). As such, a failure to disengage may negatively impact post-retirement adaptation and well-being (Wrosch et al., 2013). Several aspects of elite athletic careers may pose additional disengagement challenges for retiring athletes. Obstacles to remaining a professional athlete, such as injuries, can often be overcome through rest and rehabilitation (Podlog & Eklund, 2006), and competing psychosocial or non-athletic goals, such as settling down for a family, can be delayed (Wylleman & Rosier, 2016). Furthermore, for athletes to have reached a professional level of performance, they invested heavily in the sport, rarely disengaging from athletic goals throughout their development and careers, and were trained to persevere in the face of obstacles (Warriner & Lavallee, 2008). As such, letting go of a career that required extensive emotional, relational, temporal, and material investment may prove even more challenging for elite athletes (Miller & Kerr, 2002). Consistent with the disengagement literature, we hypothesize that athletes' increased disengagement would be associated with increased SWB in retirement.

The Organismic Integration Theory and Motivation for Retirement

The Organismic Integration Theory (OIT) of goal striving (Ryan & Deci, 2017), developed as mini theory of SDT (Ryan & Deci, 2017), focuses on the quality of motivation underlying behavior. Researchers distinguish between predominately autonomous and predominately controlled motives, although both forms of motivation tend to co-occur to different degrees in most complex behaviors (Ryan & Deci, 2017). Autonomous motivation is characterized by a feeling of choice and volition, and describes partially or fully internalized reasons for enacting a behavior, such as inherent interest and enjoyment (*intrinsic motivation*), because one believes the behavior to be meaningful and important (*identified motivation*) or because it truly represents personal values and interests (*integrated motivation*). Autonomous motivation has been robustly linked to sustained goal effort (Sheldon & Elliot, 1998; Sheldon & Houser-Marko, 2001), increased goal progress (Holding, Hope, Harvey, Jetten, & Koestner, 2017; Koestner, Otis, Powers, Pelletier, & Gagnon, 2008) and increased goal attainment (Sheldon & Houser-Marko, 2001; Smith, Ntoumanis, Duda, & Vansteenkiste, 2011).

Conversely, controlled motivation subsumes the two least internalized forms of motivation: enacting a behavior in response to external contingencies, such as the expectation of reward or punishment (*external motive*), or of internal feelings of obligation and pressure (*introjected motive*). Controlled motivation has shown weak relationships with goal progress and attainment outcomes (Koestner et al., 2008; Smith et al., 2011).

In the context of athletic retirement, two motivational processes may be important for predicting athletes' disengagement and well-being (1) athletes

autonomous and controlled motives for retirement, as well as (2) athletes' autonomous and controlled motives for engaging with the sport prior to retirement. Numerous studies demonstrate that athletes who retired voluntarily and planned their retirement in advance felt higher perceived control over the retirement process, faring better than retirees who felt pressured or controlled into retirement (Taylor & Ogilvie, 2001; Webb et al., 1998). A recent systematic review of 126 studies examining athletes' career transition out of sport from 1968 until 2010 identified fifteen factors that have been associated with athletes' career transition adjustment (Park et al., 2013). Notably, the "voluntariness of the retirement decision," defined as the degree of control athletes have over their decision to retire, was a factor examined in 21 studies included by Park et al. (2013) in the review. Park et al. (2013) found that 18 of these studies reported a positive association between voluntariness of the retirement decision and the quality of career transition.

Although Park et al.'s (2013) study was not contextualized using OIT, it appears that many of the fifteen factors that Park et al. (2013) identified as being important in the prediction of athletes' career transition adjustment can be understood in terms of autonomous or controlled motives for retirement. For example, athletes' interest in "career/personal development" showed positive associations with the quality of their transition (Park et al., 2013) and can be understood as an autonomous motive for retirement. Conversely, factors such as "health problems/injuries" and "poor relationship with coach" were sources of career transition difficulties (Park et al., 2013) and could be subsumed under controlled motives for retirement: in both circumstances, external pressures and contingencies motivated the decision to retire. As such, many of the independent factors previously associated with positive or negative post-retirement outcomes can be organized into OIT's theoretical framework of autonomous and controlled motives. We predict that holding more autonomous motives for retirement will facilitate the disengagement process and increased SWB, whereas holding more controlled motives will hinder progress of disengagement, with negative consequences for SWB.

Beyond examining the motives for retirement in predicting athletes' disengagement and post-retirement SWB, it may also be important to consider athletes' motivation for engaging with the sport prior to retirement. Recent work in the SDT framework has also begun to uncover how motivation for goal pursuit predicts how athletes will respond when confronted with unattainable goals. For example, Smith and Ntoumanis (2014) examined university athletes who were asked to imagine a season-length sport goal becoming unattainable. These researchers found that autonomous motives for the sports goal were negatively associated with participants' willingness to disengage from the goal in the hypothetical scenario of goal unattainability. Ntoumanis, Healy, Sedikides, Smith, and Duda (2014) extended these findings with laboratory study measuring athletes' autonomous and controlled motivation for attaining an 8-minute cycling goal, and manipulated the attainability of this goal on a cycling ergometer. Ntoumanis et al. (2014) found that athletes' autonomous motivation for the cycling goal negatively predicted cognitive ease of disengagement from this goal (i.e., participants found it difficult to stop thinking about the cycling goal and let it go following the task). These studies underline the importance of assessing motivation for goal engagement when predicting ease of

disengagement. Recent SDT research examining the motivation for *not* engaging with a target goal also control for the motivation for engaging with the goal. For instance, previous studies have addressed unemployed peoples' (Vansteenkiste, Lens, De Witte, De Witte, & Deci, 2004) and nurses' (Halvari, Vansteenkiste, Brørby, & Karlsen, 2013) reasons for searching and not searching for a job, finding that autonomous and controlled reasons for not searching contributed additional predictive power in explaining search behavior and well-being beyond motivational constructs that focused only on searching. On a conceptual level, there is a parallel between these studies and our argument that both athletes' motivation for engaging with their sport, as well as their motivation for retirement may impact disengagement progress and well-being in retirement.

The Present Study

The present study aimed to shed light on the predictive effects of autonomous and controlled motivation (for sport engagement and retirement) on disengagement from a terminated athletic career by studying recently retired elite athletes. Specifically, we examined how retired elite athletes' motivation for sport engagement at career peak, and motivation for retirement, both affected athletes' disengagement progress post-retirement. In turn, we sought to examine how athletes' disengagement progress predicted their well-being post-retirement.

Our first hypothesis was that athletes' SWB would fluctuate as a function of their retirement stage: that athletes' SWB would decrease immediately following retirement and make a recovery in later stages of the retirement process. Consistent with the goal adjustment literature (e.g., Wrosch et al., 2013), we also hypothesized that disengagement progress from the terminated athletic career would increase over time and would be positively associated with well-being in retirement.

Given the literature review by Park et al. (2013) we hypothesized that autonomous motivation for retirement would both be associated with greater goal disengagement and greater well-being in retirement. Additionally, we wanted to explore whether motives underlying retirement would have incremental predictive validity beyond the motives underlying athletes' sport engagement at their career peak. We had no clear hypothesis for how motivation for sport engagement (autonomous vs. controlled) during athletes' career peak would influence their disengagement progress in retirement. Because autonomously endorsed activities represent a person's values and enduring interests, letting go of an autonomously endorsed sporting career might be difficult for athletes, resulting in decreased disengagement. On the other hand, the feeling of choice and volition associated with autonomous sport engagement might give rise to a more flexible approach when engagement with the sport becomes problematic or unattainable, thus facilitating goal disengagement.

Methods

Participants

We recruited 158 government-supported Canadian athletes to participate in this study (61% female; 85% Anglophone; 15% Francophone; X age = 30.56 years,

$SD = 5.88$ years). These high-performance athletes were associated with the Athlete Assistance Program (AAP), a Canadian funding program under Sport Canada which financially supports athletes with potential to achieve top 16 results at international sporting. In our sample, 86.1% reported having competed in an Olympic sport, 9.5% reported having competed in a Paralympic sport, and 4.4% reported having competed in a non-Olympic sport. At their highest level of competition, 65.6% of the sample reported having been carded by the AAP with the “Senior International Card” (the highest level of funding for athletes expected to compete at an Olympic, Paralympic or international championship), 16.6% with the “Senior National Card” (for athletes expected to compete at a national level), and finally, 17.8% were carded with the “Development Card” (for athletes training to compete on a national level). Athletes reported having competed in their sport prior to retirement for an average of 15.58 years ($SD = 6.08$ years). The first survey of this study was administered in 2014. As only a small handful of elite athletes retire in a given year, and most retire following Olympic Games, we recruited athletes that had retired between 2008 and 2014 allowing us to capture retirees following two summer and two winter Olympic Games. The majority of the sample (58%) retired between 2012 and 2014. On average, athletes reported having retired 2.55 years ($SD = 1.64$) before participating in our study. Athletes were also asked if they agreed to be contacted for a follow-up study which was sent to 150 participants (94.9% of the original sample) 1.5 years after the initial survey. Of this sub-sample, 63% ($N = 94$) participated in the second part of the study.

Procedure

Through collaboration with the Canadian Sport Institute’s Elite Athlete Transition Program (EATP), we contacted retired athletes via email. The email provided the prospective participants with information about the study, and allowed participants to access an online link where they were presented with a consent form. This study was approved by the University ethics board (REB file #332-0114), and participants gave written consent before participating. As recommended by Vallerand (1989), a parallel back-translation procedure was used to translate scales to French by two native Francophone speakers with academic backgrounds in psychology. Preliminary analyses revealed no differences in the means of the outcome variables as a function of the survey language. Participants were compensated for their participation with \$10 online gift cards for iTunes or Amazon.

In total, four time points in athletes’ lives were assessed; three time points in the first survey and one time point in the follow-up survey. The four time points represented the peak of athletes’ career (T1), two months post-retirement (T2), approximately two years following retirement (T3) and approximately 3.5 years following retirement (T4). Because all athletes in our sample had already retired, the T1 and T2 assessments were retrospective. We sought to minimize participants’ recall bias and enhance the validity of participants’ retrospective information recall by instructing participants to think back to their former selves and write a small paragraph describing themselves and how they felt about the sport at each time point, before answering survey questions related to that time point. This priming

technique was also used in T3 in which participants were asked to write a short paragraph describing themselves in the present.

General demographic information was assessed prior to the priming sections. Athletes reported on their SWB at all four time points. At T1 athletes reported on their motivation for sport engagement. At T2 participants were asked about their specific reasons for retirement and their motivation for retirement. At T3 and T4 participants reported on disengagement from their former competitive sport and reengagement with new pursuits.

Measures

Subjective well being (SWB). We employed the Mood Report (Emmons & Diener, 1985) to assess the emotional component of SWB. For each item, participants rated the extent to which they experienced a specific emotion on a 7-point Likert scale ranging from “not at all” (1) to “extremely” (7). The scale consists of nine items, four describing positive affect (e.g., joyful, happy) and five describing negative affect (e.g., anxious, worried). The five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was employed to assess the cognitive component of SWB. Participants rated the extent to which they agreed with statements regarding how satisfied they felt about the current conditions in their life on a 7-point Likert scale ranging from “not at all true” (1) to “very true” (7). A composite index of SWB was calculated with the mean standardized scores of positive affect, reversed negative affect, and satisfaction with life at all four time points.

Motivation for sport. At T1 participants completed a 10-item abbreviated version of the Sport Motivation Scale (SMS) (Pelletier et al., 1995). While the SMS differentiates between intrinsic and extrinsic motivation, we sought to use these items to distinguish between autonomous and controlled motivation. Participants responded to the prompt “Why did you practise your sport?”. Participants rated items on a 7-point Likert scale ranging from “does not correspond at all” (1) to “corresponds exactly” (7). The abbreviated measure included six items measuring autonomous motivation, and four items measuring controlled motivation. The items measuring autonomous motivation included items that measured the three subtypes of intrinsic motivation “to know” (e.g., “For the pleasure that I felt while learning training techniques that I had never tried before.”), “to experience stimulation” (e.g., “For the excitement I felt when I was involved in the activity.”) and “to accomplish” (e.g., “For the satisfaction I experienced while I was perfecting my abilities.”) as well as identified motivation (e.g., “Because it was one of the best ways to maintain good relationships with my friends.”). We calculated the mean of these six items to compute autonomous motivation for sport. The four items measuring controlled motivation included three items that measured external regulation (e.g., “For the prestige of being an athlete.”; “To show others how good I was at my sport.”; “Because it allowed me to be well regarded by people that I know.”) as well as introjected motivation (e.g., “Because I would feel bad if I was not taking time to practise.”). Reliability was good with Cronbach α 's of .76 for autonomous motivation and .73 for controlled motivation.

The goal adjustment scale. The Goal Adjustment Scale was adapted from Wrosch et al. (2003) to capture athlete's disengagement from goals related to

their athletic careers and reengagement with new pursuits. Four statements assessed athletes' disengagement from their athletic careers. Consistent with Wrosch et al. (2003), two items were related to the "effort" component of goal disengagement (e.g., "It's easy for me to reduce my effort toward the goal of becoming a professional athlete"), while two statements were related to the "commitment" component of goal disengagement (e.g., "I stayed committed to the goal of becoming a professional athlete for a long time; I can't let it go"). Participants rated items on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). Successful goal reengagement was measured by six statements reflecting initiation of alternative goal pursuit (e.g., "I seek other meaningful goals" and "I tell myself that I have a number of other new goals to draw on."). This scale was administered at T3 and T4. Reliability was excellent with Cronbach α 's of .84 for both disengagement and reengagement.

Motivation for retirement. Participants rated their motivation for retirement with two slider scale questions, ranging from "0 – not at all", to "100 – completely". The first question assessed the degree to which the participant felt autonomous about their decision to retire ("How much did you feel it was your own choice/desire to retire from your sport?"). The second question assessed the degree to which the participant felt controlled in their decision to retire ("How much did you feel pressured and compelled to retire from your sport?"). These measures were significantly negatively correlated with a Pearson correlation ($r(136) = -.47, p < .001$).

Reasons for retirement. We assessed athletes' reasons for retirement by asking participants to select as many reasons as applied to their circumstance from a 15-item list supplied to us by the AAP. Six of these reasons reflected autonomous reasons for retirement (e.g., "I wanted to pursue an alternative career" or "I achieved my sport related goals"). The remaining nine reasons participants could select from represented controlled reasons for retirement (e.g., "Injury" or "I was not selected on the national team").

Results

Analytic Strategy

All analyses were conducted using SPSS 23. We conducted some preliminary correlational analyses to understand the association between athletes' reasons for retirement and their motivation to retire. We hypothesized that reasons reflecting athletes' choice, agency and interest would positively correlate to autonomous motivation for retirement, whereas reasons reflecting pressure and conflict would positively correlate with controlled motivation for retirement. We also describe the correlations between the key variables of the study. Next, we conducted some preliminary analyses with the aim of informing the reader about the evolution of the key variables (SWB, disengagement, reengagement) throughout the study, via a repeated-measures within-subjects ANOVA and paired samples t-tests. For our main research questions, namely (1) the extent to which motivational factors impacted athletes' disengagement progress, and (2) the extent to which motivational factors and disengagement progress impacted athletes' SWB, we used hierarchical multiple regression analyses.

Preliminary Analyses

Association of reasons for retirement with retirement motivation. From the 15 available items to choose from, athletes selected between 1 and 10 reasons for retirement ($M=3.68$, $SD=1.79$). In line with our expectations, our measure of autonomous motivation for retirement was positively correlated, using Pearson's correlation, with items reflecting athletes' choice, agency and interest, such as "wanting to pursue an alternative career" ($r(154)=.34$, $p<.001$), "achieving athletic career objectives" ($r(154)=.34$, $p<.001$), "no longer being interested in competing" ($r(154)=.33$, $p<.001$), and "wanting to pursue education" ($r(154)=.21$, $p=.009$), while autonomous motivation was negatively associated with items such as "not being selected for the national team" ($r(154)=-.23$, $p=.004$) and "injury" ($r(154)=-.36$, $p<.001$). Conversely, our measure of controlled motivation for retirement was positively correlated with items reflecting conflict and tension such as "difficulties with my coach/staff" ($r(139)=.31$, $p<.001$) and "experiencing discrimination" ($r(139)=.21$, $p=.015$), while being negatively associated with more autonomous reasons such as "no longer being interested in competing" ($r(139)=-.31$, $p<.001$) and "achieving athletic career objectives" ($r(139)=-.17$, $p=.046$).

Associations between key variables. Table 1 depicts the correlations between athletes' motivation for sport engagement, motivation for retirement, and athletes' disengagement progress over time. Athletes' autonomous motivation for sport engagement and athletes' autonomous motivation for retirement were both positively related to T3 disengagement progress. Conversely, athletes' controlled motivation for sport engagement and controlled motivation for retirement were both negatively related to T3 disengagement progress. Importantly, neither autonomous nor controlled motivation for sport engagement was associated with autonomous or controlled motivation for retirement. Table 1 also shows that autonomous motivation for retirement was positively associated with SWB at T2 and T3, indicating that athletes who felt more autonomous in their motivation for retiring tended to report higher SWB in retirement.

Changes in key variables over time. These analyses are included to orient the reader to the trajectories of athletes' SWB, disengagement, and reengagement progress over the course of their retirement. Using paired samples t-tests we analyzed the change in athletes' disengagement and reengagement progress from T3 to T4. Over the 1.5-year follow-up (T4), athletes continued to make disengagement progress ($M=5.45$, $SD=1.39$) ($t(1, 91)=-4.20$, $p<.001$). However, athletes did not differ significantly in their T3 reengagement progress, ($M=5.87$, $SD=0.97$) versus their T4 reengagement progress ($M=5.92$, $SD=0.82$) which was judged to be at a high level at T3. A repeated measures ANOVA was conducted to examine how athletes' SWB fluctuated throughout retirement, with time period used as a within-subjects factor with four levels (T1, T2, T3, and T4). We conducted Mauchly's Test of Sphericity and found that the assumption of sphericity had been violated $X^2(5)=29.89$, $p<.001$, which is common in repeated measures designs (O'Brien & Kaiser, 1985). Since the violation of sphericity increases the risk of a Type I error, we applied a Greenhouse-Geisser correction in our analysis. A repeated measures ANOVA with a Greenhouse-Geisser correction

Table 1 Means, Standard Deviations and Correlations Between the Major Study Variables

	\bar{x} s	1.	2.	3.	4.	5.	6.	7.	8.	9.	10
1. T1 autonomous sport motivation	5.88 (.97)	X									
2. T1 controlled sport motivation	4.51 (1.27)	.26**	X								
3. T2 autonomous motivation for retirement	71.68 (32.58)	.01	-.09	X							
4. T2 controlled motivation for retirement	36.62 (35.05)	-.11	.02	-.47**	X						
5. T3 Disengagement	4.70 (1.51)	.16*	-.20*	.36**	-.22**	X					
6. T4 Disengagement	5.45 (1.40)	-.05	-.06	.26*	.09	.33**	X				
7. T1 SWB	5.82 (.92)	.23**	.13	.04	-.16	-.06	-.10	X			
8. T2 SWB	4.46 (1.45)	.16	.04	.57**	-.44**	.34**	.16	.13	X		
9. T3 SWB	5.31 (1.20)	.24*	-.03	.24*	-.15	.29**	.08	.22**	.36**	X	
10. T4 SWB	5.21 (1.05)	.24*	-.05	.15	-.06	.21**	.27**	.37**	.25*	.55**	X

*Correlation significant at $p < .05$, **Correlation significant at $p < .01$.

determined that SWB differed significantly between the four time-points $F(2.48, 227.96) = 24.76, p < .001$. Post-hoc tests using the Bonferroni correction revealed that athletes generally reported high levels of SWB at the peak of their athletic careers (T1) followed by a significant decrease 2 months post-retirement (T2) ($M = 5.60, SD = .10$ vs. $M = 4.47, SD = .16$, respectively). This decrease in SWB was recovered at the later stages athletes of retirement (T3) ($M = 5.37, SD = .12$) and (T4) ($M = 5.20, SD = .11$).

Main Results

Motivational factors influencing disengagement from athletic career. To answer our first question regarding the motivational factors implicated in athletic career disengagement we examined athletes' autonomous and controlled motivation for sport engagement at their career-peak, as well as their autonomous and controlled motivation for retirement, to predict disengagement progress approximately 2 years after retirement (T3). We conducted a two-step hierarchical regression entering athletes' autonomous and controlled motivation for sport engagement in the first step

and athletes' autonomous and controlled motivation for retirement in the second step. At the first step, athletes' autonomous motivation for sport engagement was associated with increased disengagement progress ($\beta = .24, t = 2.77, p = .006$) whereas controlled motivation was associated with decreased disengagement progress ($\beta = -.22, t = -2.52, p = .013$). This step accounted for 8% of the variance in T3 disengagement progress ($F(2, 130) = 5.66, p = .004$). At the second step, athletes' autonomous motivation for retirement also emerged as a significant predictor of disengagement progress ($\beta = .25, t = 2.73, p = .007$) while controlled motivation for retirement was non-significant ($\beta = -.06, t = -.67, p = .51$), predicting an additional 8% of the variance in disengagement progress ($F(4, 128) = 6.06, p < .001$). In total, this model accounted for 16% of the variance in athletes' disengagement progress at T3. We then repeated the same analysis with T4 disengagement progress entered as the dependent variable. Approximately 3.5 years post-retirement, only autonomous motivation for retirement was associated with increased disengagement progress ($\beta = .37, t = 3.28, p = .002$), accounting for 12.4% of the variance in T4 disengagement progress ($F(4, 75) = 2.65, p = .04$).

Psychological processes and SWB over time. After establishing that autonomous motivation for retirement predicted the largest variance in athletes' disengagement progress, we next sought to examine the effects of motivation for retirement and disengagement progress on athletes' SWB. Because motivation for retirement and disengagement progress were both related to SWB we conducted a hierarchical regression to predict athletes' SWB approximately 2 years post-retirement (T3). We entered athletes' baseline SWB and years since retirement in the first step of the regression to control for participant differences in baseline well-being as well as differences in the latency between participants' retirement and survey completion. We entered autonomous motivation for retirement in the second step of the regression, and athletes' T3 disengagement progress at the third step of the regression. At the first step, athletes' time since retirement ($\beta = .18, t = 2.26, p = .02$) and baseline SWB ($\beta = .20, t = 2.51, p = .01$) were both significant predictors of T3 SWB accounting for 7.7% of the variance ($F(2, 142) = 5.92, p = .003$). At the second step of the regression, athletes' autonomous motivation for retirement also predicted T3 SWB ($\beta = .23, t = 2.79, p = .006$) explaining an additional 4.8% of the variance in athletes' SWB ($F(3, 141) = 6.73, p = .006$). Finally, at the third step, athletes' T3 disengagement progress was entered in the regression ($\beta = .23, t = 2.76, p = .006$), predicting an additional 4.5% of the variance in athletes' SWB ($F(4, 140) = 7.19, p = .006$). In total, this model accounted for 17% of the variance in athletes' SWB. As such, these findings suggest that autonomous motivation for retirement and disengagement progress are both important factors in determining athletes' post-retirement well-being. The same analysis was conducted with T4 SWB as the dependent variable. Only baseline SWB ($\beta = .37, t = 3.67, p < .001$) and athletes' T3 disengagement progress ($\beta = .24, t = 2.29, p = .024$) significantly accounted for athletes' well-being approximately 3.5 years post-retirement.

Discussion

The primary objectives of the present study were (1) to conceptualize the transition into athletic retirement as a form of disengagement, (2) introduce SDT motivation

factors as important predictors for successful disengagement from a terminated athletic career, (3) examine how autonomous motivation for retirement and disengagement progress impacted athletes' SWB in retirement.

As expected, athletes' SWB fluctuated as a function of their retirement stage: while SWB decreased following retirement, athletes recovered in their SWB close to baseline levels approximately 2 and 3.5 years following retirement. Over this time period athletes continued to disengage from their terminated athletic career as evidenced by the samples' increased average disengagement levels at the 3.5-year follow-up. Consistent with the disengagement literature, athletes' disengagement progress was positively associated with their SWB at all retirement measurement points. As such, the disengagement process unfolded over several years, highlighting the positive impact of disengagement on well-being, as well as difficulty of relinquishing psychological commitment from a powerful career and role. Conversely, we found no differences in mean athlete reengagement in our follow-up survey, suggesting that athletes' reengagement efforts had already plateaued at the time of the first survey administration. This finding was not surprising given the information we obtained about the "reengagement support" athletes receive through Sport Canada's transition program (EATP). At the time our study was conducted, the Canadian EATP had devoted considerable resources towards helping athletes plan their future by ensuring that retired athletes had goals and career plans following retirement. One speculative explanation for the high reengagement scores may be that our sample was well-prepared by the EATP for this component of retirement, although we do not have data to support this claim. Nevertheless, preparing athletes to psychologically disengage from their former athletic career was not part of Sport Canada's transition program, and is currently not a component of any athlete transition program to the authors' best knowledge. This has important implications for sport transition programs. Clinicians may be focusing heavily on helping athletes reengage with new goals and careers post-retirement without sufficiently guiding athletes towards psychological disengagement from their former athletic pursuits. We address the possibility of including disengagement interventions in athlete transition programs later in the discussion section.

The results of this study uncovered two factors facilitating disengagement: athletes' autonomous sport motivation at their career peak and athletes' autonomous motives for retirement. Firstly, we found that athletes who felt more autonomous about engaging with their sport at their career peak tended to experience greater disengagement progress in retirement, while athletes who felt controlled about engaging with their sport at their career peak tended to have more difficulty disengaging. No study to date has examined the effect of motivation for sport engagement on disengagement progress in retirement. The most conceptually similar work that has been conducted would suggest that autonomous motivation for goal engagement can negatively impact the ease of goal disengagement (e.g., Smith & Ntoumanis, 2014; Ntoumanis et al., 2014). However, both the scope of the goals examined (e.g., imagining unattainability of season length goal; 8-minute cycling goal on ergometer) as well as the samples studied (e.g., student athletes training for approximately three hours per week) are too dissimilar to elite athletic career termination to draw generalizable conclusions. Furthermore, athletic career termination is a decision with identity-relevant implications likely prompting

considerable reflection and exploration in athletes, which highlights another important distinction between our study and the previous studies. One interpretation may be the self-concordant, integrated motivation athletes experienced at their career peak helped athletes regulate disengagement with greater ease, flexibility, and openness, once confronted with the reality of retirement. Conversely, athletes who felt controlled about their sport at their career peak demonstrated less disengagement progress in retirement. As Sheldon (2014, p. 355) wrote: “. . . pursuing non-concordant [i.e., non-autonomous] goals is risky; people are more likely to give up or fail to achieve such goals, and when they do achieve the goals, they may fail to benefit from such achievement”. In our sample, the athletes who felt predominately controlled about sport engagement at their career peak may still be grappling with the same controlling forces of external rewards, social approval or feelings of guilt/pressure in retirement. In other words, athletes who used their competitive sporting career as a vehicle to seek external approval or appease internal ego demands may continue to feel subjugated to these demands even when the time-frame to pursue an athletic career has elapsed, leading to poorer disengagement outcomes. Future prospective longitudinal studies surveying athletes prior to retirement are needed to replicate this finding and tease apart the mechanisms at play.

A second factor facilitating athletes' disengagement was their autonomous motivation for retirement. While previous research has highlighted the importance of voluntariness in athletes' retirement decision when predicting the quality of the career transition (for a review see Park et al., 2013), the present study considered athletes' motives for retirement under the theoretical framework of OIT by distinguishing between autonomous and controlled reasons for retirement. As expected, athletes who felt greater autonomous motivation about retirement tended to make more disengagement progress approximately two years following retirement.

Clinical Implications for Sport Transition Programs

Results of our study suggest that disengagement progress had important implications for athletes' well-being in retirement. Importantly, this study assessed two novel predictors, athletes' autonomous motivation for retirement and athletes' disengagement progress, in determining athletes' SWB post-retirement. Our results showed that autonomous motivation for retirement and disengagement from the terminated career were both associated with elite athletes' increased well-being approximately two years post-retirement. This finding has the potential to enhance athlete transition and support programs that aim to maximize athlete SWB post-retirement. By assessing athletes' motivation for retirement, transition programs are likely to identify athletes that experience few autonomous reasons for retirement and/or predominantly controlled reasons for retirement. Once identified, these athletes may benefit from autonomy enhancing interventions designed to help athletes internalise their motivation for retirement. These interventions could, for example, validate athletes' emotional responses about retirement, explore athletes' attitudes about retirement, and help athletes generate autonomous reasons for why retirement may be in their best interest or congruent with other life values. Importantly, results from this study suggest that holding autonomous motives for retirement will facilitate athletes' disengagement from their terminated athletic career. Autonomy enhancing interventions have proven successful in other domains

of lifestyle disengagement, such as smoking cessation (Williams et al., 2006). Indeed, in a smoking cessation study by Williams et al. (2006), counselors of the intervention group focused understanding quitters' perspectives and emotional responses about quitting smoking, as well as exploring quitters' attitudes about why they liked smoking. Follow-up visits for those who had not wanted to quit smoking involved counselors' reviewing the participants' values and initiating a discussion about any further thoughts on trying to quit (Williams et al., 2006). Athletes nearing retirement might also benefit from psychoeducation about the importance of psychological disengagement and work collaboratively with sport psychologists to identify strategies that will help them "let go". Such strategies may include avoiding self-blame and attributing perceived negative outcomes to causes outside the self (Wrosch, Bauer, Miller, & Lupien, 2007).

Theoretical Implications

Finally, the research presented in this study may have implications for predicting successful disengagement outside of the domain of athletic retirement. Thus far, researchers in the field of lifespan motivation have largely considered individual difference measures as predictors of goal disengagement (Heckhausen & Wrosch, 2016). For example, individuals' goal disengagement capacity, which refers to individuals' general tendencies to withdraw effort and commitment from the pursuit of unattainable goals across different domains, has been robustly linked to increased disengagement progress (Wrosch et al., 2013). This study is the first to suggest that individuals' disengagement progress may also be impacted by both their motivation for engagement, as well as their motivation for disengagement. As such, it may be important for the field to look beyond broad individual difference measures when predicting disengagement progress, and to start considering motivational factors that are specific to the goal or network of goals that the individual intends to disengage from.

Limitations and Future Directions

Despite the contribution of the present research to our understanding of athletes' disengagement from a terminated athletic career, it is important to underscore the limitations of this study. While we used longitudinal data to follow-up retired elite athletes 1.5 years after their initial participation, a major limitation of this study was the use of retrospective data for the first two time points of the study. While our sample of 158 elite retired athletes represents a major strength of this paper, studying this population with a fully prospective longitudinal design was not feasible for the scope of this project. We sought to minimize participants' memory bias and enhance the validity of retrospective information recall by priming athletes with writing exercises prior to the completion of questionnaires targeting distinct phases of their transition. However, the design issues of our study limit the interpretability of our results. For example, due to the concurrent measurement of motivation to retire and disengagement progress, we cannot exclude the possibility that athletes further along in the disengagement process reconstructed their retirement experience in a way that allowed them to perceive greater retrospective autonomy in their retirement decision. In fact, an additional benefit of successful

disengagement may be the enhanced perception of personal volition and integration when looking back on important life decisions, which is an interesting research question unto itself. Nonetheless, the cross-sectional nature of the first three measurement points weakens claims of directionality and may have biased participant responding. The short-comings of our study design also limited our analytical decisions, as more sophisticated analyses, such as mediation analyses, are not warranted on cross-sectional data (Cole & Maxwell, 2003; Maxwell & Cole, 2007). Clearly, future studies are needed to replicate the present findings with fully prospective longitudinal data that assesses elite athletes prior to retirement as well as experimental data that can fully address the directionality of effects.

Our longitudinal follow-up data demonstrated that athletes continued to disengage over the 1.5-year follow-up period, and that athletes' disengagement progress was still positively related to their SWB at this later time. None the less, the effects of our second regression model of autonomous motivation for retirement predicting SWB was no longer significant when T4 SWB was entered as the dependent variable. It may be that our T4 follow-up sample was too small to capture the effects of motivation to retire on SWB approximately 3.5 years since athletes retired. The reliance on self-report measures in this study represents a further limitation, even though the use of self-reports is consistent with prior disengagement and motivation research (e.g., Sheldon & Elliot, 1998; Wrosch et al., 2003).

While the present study focused on the application of OIT as a framework for understanding the motivation underlying athletic career termination, Basic Psychological Needs Theory (BPNT) is another important SDT mini-theory of relevance for understanding athletes' retirement decision and outcomes. BPNT highlights how the needs of competence, relatedness, and autonomy are central to human wellness, development, and thriving (Ryan & Deci, 2017). The need for autonomy is about experiencing choice and volition in one's behavior and endorsing actions as consistent with one's interests, values, or beliefs. The need for competence refers to feelings of effectiveness and mastery in one's environment, and the need for relatedness involves feeling close and meaningfully connected to the people in one's environment (Ryan & Deci, 2017). In sport research, numerous studies have linked basic needs satisfaction with indicators of adaptive functioning, such as increased well-being (Gagné, Ryan, & Bargmann, 2003), persistence (Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002), and protection from burnout experiences (Perreault, Gaudreau, Lapointe, & Lacroix, 2007). Meanwhile psychological need thwarting in sport is more pernicious than the absence of need satisfaction (Gunnell, Crocker, Wilson, Mack, & Zumbo, 2013), and is associated with a host of maladaptive outcomes (i.e., disordered eating, depression, negative affect and physical symptoms, for a review see Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2011). Future research would benefit from including assessments of psychological need satisfaction and thwarting prior and subsequent to retirement. Not only would psychological need satisfaction be an excellent outcome measure to capture athletes' post-retirement adaptation, but measuring need satisfaction (and thwarting) would also allow researchers to understand the relationship between psychological need satisfaction during their career and how that impacted athletes' motivation to retire, their disengagement progress, and post-career goal reengagement. In turn, it is likely that athletes'

disengagement and reengagement may enhance feelings of autonomy, competence and relatedness (see Sheldon & Elliott, 1999 for how goal attainment increases need satisfaction). Assessing basic psychological needs would also fit with the recently developed holistic ecological perspective in athletic career research, which emphasizes the “athletic career as a social affair” (Henriksen, Larsen, & Christensen, 2014) and shifts the researchers’ focus from an individual athlete to the environment the athlete belongs to. As such, understanding the dynamic interplay between athletes’ need satisfaction/thwarting and their motivation for retirement, disengagement, and reengagement, will add value to future clinical interventions and build theoretical bridges between OIT, BPNT, and goal adjustment theory.

Conclusion

In conclusion, this paper explored novel motivational antecedents of disengagement from a terminated athletic career grounded in SDT. This study highlights the need for transition and support programs to balance the predominant focus on “what’s next” (reengagement) and take more time to process “what was there” (motivation for sport engagement and retirement). While these findings require replication with an improved study design, they have the potential to make important applied contributions athlete transition programs as well as furthering the field of disengagement research.

References

- Alfermann, D., & Stambulova, N. (2007). Career transitions and career termination. In G. Tenenbaum & R.C. Eklund (Eds.), *Handbook of sport psychology* (pp. 712–733). Hoboken, NJ: John Wiley & Sons Inc.
- Bartholomew, K., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and the darker side of athletic experience: The role of interpersonal control and need thwarting. *Sport and Exercise Psychology Review*, 7(2), 23–27.
- Carver, C.S., & Scheier, M.F. (2005). Engagement, disengagement, coping, and catastrophe. In A.J. Elliot & C.S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 527–547). New York, NY: Guilford Publications.
- Cole, D.A., & Maxwell, S.E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, 112(4), 558–577. PubMed ID: 14674869 doi:10.1037/0021-843X.112.4.558
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34–43. PubMed ID: 11392863 doi:10.1037/0003-066X.55.1.34
- Diener, E.D., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. PubMed ID: 16367493 doi:10.1207/s15327752jpa4901_13
- Emmons, R.A., & Diener, E. (1985). Personality correlates of subjective well-being. *Personality and Social Psychology Bulletin*, 11(1), 89–97. doi:10.1177/0146167285111008

- Erpič, S.C., Wylleman, P., & Zupančič, M. (2004). The effect of athletic and non-athletic factors on the sports career termination process. *Psychology of Sport and Exercise*, 5(1), 45–59. doi:10.1016/S1469-0292(02)00046-8
- Farquhar, J.C., Wrosch, C., Pushkar, D., & Li, K.Z. (2013). The value of adaptive regret management in retirement. *The International Journal of Aging and Human Development*, 76(2), 99–121. PubMed ID: 23687796 doi:10.2190/AG.76.2.a
- Gagné, M., Ryan, R., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15(4), 372–390. doi:10.1080/714044203
- Gagné, M., Wrosch, C., & Brun de Pontet, S. (2011). Retiring from the family business: The role of goal adjustment capacities. *Family Business Review*, 24(4), 292–304. doi:10.1177/0894486511410688
- Gunnell, K.E., Crocker, P.R., Wilson, P.M., Mack, D.E., & Zumbo, B.D. (2013). Psychological need satisfaction and thwarting: A test of basic psychological needs theory in physical activity contexts. *Psychology of Sport and Exercise*, 14(5), 599–607. doi:10.1016/j.psychsport.2013.03.007
- Halvari, H., Vansteenkiste, M., Brørby, S., & Karlsen, H.P. (2013). Examining antecedents and outcomes of part-time working nurses' motives to search and not to search for a full-time position. *Journal of Applied Social Psychology*, 43(8), 1608–1623. doi:10.1111/jasp.12112
- Heckhausen, J., & Wrosch, C. (2016). Challenges to developmental regulation across the life course: What are they and which individual differences matter? *International Journal of Behavioral Development*, 40(2), 145–150. doi:10.1177/0165025415588796
- Heckhausen, J., Wrosch, C., & Fleeson, W. (2001). Developmental regulation before and after a developmental deadline: The sample case of “biological clock” for childbearing. *Psychology and Aging*, 16(3), 400–413. PubMed ID: 11554519 doi:10.1037/0882-7974.16.3.400
- Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of life-span development. *Psychological Review*, 117(1), 32–60. PubMed ID: 20063963 doi:10.1037/a0017668
- Henriksen, K., Larsen, C.H., & Christensen, M.K. (2014). Looking at success from its opposite pole: The case of a talent development golf environment in Denmark. *International Journal of Sport and Exercise Psychology*, 12(2), 134–149. doi:10.1080/1612197X.2013.853473
- Holding, A.C., Hope, N.H., Harvey, B., Jetten, A., & Koestner, R. (2017). Stuck in limbo: motivational antecedents and consequences of experiencing action crises in personal goal pursuit. *Journal of Personality*, 85(6), 893–905. PubMed ID: 27977845 doi:10.1111/jopy.12296
- Koestner, R., Otis, N., Powers, T.A., Pelletier, L., & Gagnon, H. (2008). Autonomous motivation, controlled motivation, and goal progress. *Journal of Personality*, 76(5), 1201–1230. doi:10.1111/j.1467-6494.2008.00519.x
- Koukouris, K. (1991). Quantitative aspects of the disengagement process of advanced and elite Greek male athletes from organized competitive sport. *Journal of Sport Behavior*, 14(4), 227.
- Lally, P. (2007). Identity and athletic retirement: A prospective study. *Psychology of Sport and Exercise*, 8(1), 85–99. doi:10.1016/j.psychsport.2006.03.003
- Lavallee, D., Gordon, S., & Grove, J.R. (1997). Retirement from sport and the loss of athletic identity. *Journal of Personal & Interpersonal Loss*, 2(2), 129–147. doi:10.1080/10811449708414411
- Lavallee, D., & Robinson, H.K. (2007). In pursuit of an identity: A qualitative exploration of retirement from women's artistic gymnastics. *Psychology of Sport and Exercise*, 8(1), 119–141. doi:10.1016/j.psychsport.2006.05.003

- Lotysz, G.J., & Short, S.E. (2004). "What ever happened to . . ." The effects of career termination from the National Football League. *Athletic Insight: Online Journal of Sport Psychology*, 6(3), 47–66.
- Luhmann, M., Hofmann, W., Eid, M., & Lucas, R.E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology*, 102(3), 592. PubMed ID: 22059843 doi:10.1037/a0025948
- Maxwell, S.E., & Cole, D.A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, 12(1), 23–44. PubMed ID: 17402810 doi:10.1037/1082-989X.12.1.23
- Miller, G.E., & Wrosch, C. (2007). You've gotta know when to fold'em: Goal disengagement and systemic inflammation in adolescence. *Psychological Science*, 18(9), 773–777. PubMed ID: 17760771 doi:10.1111/j.1467-9280.2007.01977.x
- Miller, P.S., & Kerr, G. (2002). The athletic, academic and social experiences of intercollegiate student-athletes. *Journal of Sport Behavior*, 25(4), 346.
- Ntoumanis, N., Healy, L.C., Sedikides, C., Smith, A.L., & Duda, J.L. (2014). Self-regulatory responses to unattainable goals: The role of goal motives. *Self and Identity*, 13(5), 594–612. PubMed ID: 25104918 doi:10.1080/15298868.2014.889033
- O'Brien, R.G., & Kaiser, M.K. (1985). MANOVA method for analyzing repeated measures designs: An extensive primer. *Psychological Bulletin*, 97(2), 316–333. doi:10.1037/0033-2909.97.2.316
- Park, S., Lavalley, D., & Tod, D. (2013). Athletes' career transition out of sport: A systematic review. *International Review of Sport and Exercise Psychology*, 6(1), 22–53. doi:10.1080/1750984X.2012.687053
- Pelletier, L.G., Fortier, M.S., Vallerand, R.J., Tuson, K.M., Brière, N.M., & Blais, M.R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport & Exercise Psychology*, 17, 35–53. doi:10.1123/jsep.17.1.35
- Perreault, S., Gaudreau, P., Lapointe, M.-C., & Lacroix, C. (2007). Does it take three to tango? Psychological need satisfaction and athlete burnout. *International Journal of Sport Psychology*, 38(4), 437–450.
- Podlog, L., & Eklund, R.C. (2006). A longitudinal investigation of competitive athletes' return to sport following serious injury. *Journal of Applied Sport Psychology*, 18(1), 44–68. doi:10.1080/10413200500471319
- Ryan, R.M., & Deci, E.L. (2017). *Self-determination theory: Basic Psychological Needs in Motivation Development and Wellness*. New York, NY: Guilford Publishing.
- Ryan, R.M., Sheldon, K.M., Kasser, T., & Deci, E.L. (1996). All goals are not created equal: An organismic perspective on the nature of goals and their regulation. In P.M. Gollwitzer & J.A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 7–26). New York, NY: Guilford Press.
- Sarrazin, P., Vallerand, R., Guillet, E., Pelletier, L., & Cury, F. (2002). Motivation and dropout in female handballers: A 21-month prospective study. *European Journal of Social Psychology*, 32(3), 395–418. doi:10.1002/ejsp.98
- Sheldon, K.M. (2014). Becoming oneself: The central role of self-concordant goal selection. *Personality and Social Psychology Review*, 18(4), 349–365.
- Sheldon, K.M., & Elliot, A.J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, 24(5), 546–557. doi:10.1177/0146167298245010
- Sheldon, K.M., & Elliot, A.J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, 76(3), 482. PubMed ID: 10101878 doi:10.1037/0022-3514.76.3.482

- Sheldon, K.M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology*, *80*(1), 152–165. PubMed ID: 11195887 doi:10.1037/0022-3514.80.1.152
- Smith, A.L., & Ntoumanis, N. (2014). An examination of goal motives and athletes' self-regulatory responses to unattainable goals. *International Journal of Sport Psychology*, *45*(6), 538–558.
- Smith, A.L., Ntoumanis, N., Duda, J.L., & Vansteenkiste, M. (2011). Goal striving, coping, and well-being: A prospective investigation of the self-concordance model in sport. *Journal of Sport and Exercise Psychology*, *33*(1), 124–145. PubMed ID: 21451174 doi:10.1123/jsep.33.1.124
- Stambulova, N., Alfermann, D., Statler, T., & Côté, J. (2009). ISSP position stand: Career development and transitions of athletes. *International Journal of Sport and Exercise Psychology*, *7*(4), 395–412. doi:10.1080/1612197X.2009.9671916
- Stambulova, N.B. (2016). Theoretical developments in career transition research: Contributions of European sport psychology. In M. Raab, P. Wylleman, R. Seiler, A.-M. Elbe, & A. Hatzigeorgiadis (Eds.), *Sport and Exercise Psychology Research* (pp. 251–268). London, UK: Elsevier. doi:10.1016/B978-0-12-803634-1.00012-1
- Stephan, Y. (2003). Repercussions of transition out of elite sport on subjective well-being: A one-year study. *Journal of Applied Sport Psychology*, *15*(4), 354–371. doi:10.1080/714044202
- Taylor, J., & Ogilvie, B.C. (2001). Career termination among athletes. In R.N. Singer, H.E. Hausenblas, & C.M. Janelle (Eds.), *Handbook of sport psychology* (pp. 672–691). New York, NJ: John Wiley & Sons.
- Vallerand, R.J. (1989). Vers une méthodologie de validation trans-culturelle de questionnaires psychologiques: Implications pour la recherche en langue française [Toward a methodology for the transcultural validation of psychological questionnaires: Implications for research in the French language]. *Canadian Psychology/Psychologie Canadienne*, *30*(4), 662–680. doi:10.1037/h0079856
- Vansteenkiste, M., Lens, W., De Witte, S., De Witte, H., & Deci, E.L. (2004). The 'why' and 'why not' of job search behaviour: Their relation to searching, unemployment experience, and well-being. *European Journal of Social Psychology*, *34*(3), 345–363. doi:10.1002/ejsp.202
- Warriner, K., & Lavalley, D. (2008). The retirement experiences of elite female gymnasts: Self identity and the physical self. *Journal of Applied Sport Psychology*, *20*(3), 301–317. doi:10.1080/10413200801998564
- Webb, W.M., Nasco, S.A., Riley, S., & Headrick, B. (1998). Athlete identity and reactions to retirement from sports. *Journal of Sport Behavior*, *21*(3), 338–36.
- Wheeler, G.D., Malone, L.A., VanVlack, S., Nelson, E.R., & Steadward, R.D. (1996). Retirement from disability sport: A pilot study. *Adapted Physical Activity Quarterly*, *13*(4), 382–399. doi:10.1123/apaq.13.4.382
- Williams, G.C., McGregor, H.A., Sharp, D., Levesque, C., Kouides, R.W., Ryan, R.M., & Deci, E.L. (2006). Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology*, *25*(1), 91–101. PubMed ID: 16448302 doi:10.1037/0278-6133.25.1.91
- Wrosch, C., Bauer, I., Miller, G.E., & Lupien, S. (2007). Regret intensity, diurnal cortisol secretion, and physical health in older individuals: Evidence for directional effects and protective factors. *Psychology and Aging*, *22*(2), 319. PubMed ID: 17563187 doi:10.1037/0882-7974.22.2.319
- Wrosch, C., Miller, G.E., Scheier, M.F., & De Pontet, S.B. (2007). Giving up on unattainable goals: Benefits for health? *Personality and Social Psychology Bulletin*, *33*(2), 251–265. PubMed ID: 17259585 doi:10.1177/0146167206294905

- Wrosch, C., Scheier, M.F., Carver, C.S., & Schulz, R. (2003). The importance of goal disengagement in adaptive self-regulation: When giving up is beneficial. *Self and Identity*, 2(1), 1–20. doi:[10.1080/15298860309021](https://doi.org/10.1080/15298860309021)
- Wrosch, C., Scheier, M.F., & Miller, G.E. (2013). Goal adjustment capacities, subjective well-being, and physical health. *Social and Personality Psychology Compass*, 7(12), 847–860. PubMed ID: [25177358](https://pubmed.ncbi.nlm.nih.gov/25177358/) doi:[10.1080/15298860309021](https://doi.org/10.1080/15298860309021)
- Wrosch, C., Scheier, M.F., Miller, G.E., Schulz, R., & Carver, C.S. (2003). Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin*, 29(12), 1494–1508. doi:[10.1177/0146167203256921](https://doi.org/10.1177/0146167203256921)
- Wylleman, P., & Rosier, N. (2016). Holistic perspective on the development of elite athletes. In M. Raab, P. Wylleman, R. Seiler, A.-M. Elbe, & A. Hatzigeorgiadis (Eds.), *Sport and Exercise Psychology Research* (pp. 269–288). San Diego, CA: Elsevier Academic Press. doi:[10.1016/B978-0-12-803634-1.00013-3](https://doi.org/10.1016/B978-0-12-803634-1.00013-3)