



## The psychology of rest in athletes: An empirical study and initial model

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### ABSTRACT

**Objectives:** To better understand the psychology of rest in athletes. Rest is central to an understanding of recovery, skill learning, and expertise development in athletes, yet extant conceptualizations of rest seldom extend beyond rest as inactivity.

**Design:** A qualitative design was used to build an initial descriptive model of the psychology of rest in athletes.

**Method:** 18 athletes and 4 staff members comprising a highly-ranked women's university field hockey squad were interviewed about meanings and experiences of rest. An inductive content analysis was undertaken to identify concepts within the interview data.

**Results:** An initial descriptive model of the psychology of rest in athletes was proposed. Within this model, being well rested is considered to be a psychological state involving feeling fresh, and valuing, being motivating toward, and enjoying one's sport. Athletes become well rested by engaging in a resting process, which includes sleeping and wakeful resting. Wakeful resting involves key resting experiences including not thinking about one's sport. These experiences are obtained by engaging in specific activities (e.g., watching television) and within specific physical and social environments (e.g., being out of town). Obtaining resting experiences during in-season rest days is challenging due to limited time but more time is available to obtain these experiences during the off-season.

**Conclusion:** The initial descriptive model proposed may offer analytical generalizability by having significance and utility within research with different sport contexts and populations that is concerned with recovery, skill learning, and expertise development.

Rest is considered as a key component within conceptualizations of recovery (Kellmann et al., 2018), skill learning (Shea, Lai, Black, & Park, 2000), and expertise development (Ericsson, Krampe, & Tesch-Romer, 1993) in movement-related domains and, at the level of practice, as the most effective treatment for the overtraining and burnout syndromes (Kellmann et al., 2018). Within the recovery literature, rest is typically associated with “inactivity” (e.g., Kellmann et al., 2018), which is considered as the cessation or reduction of physical participation in training and competition, and is proposed as central to recovering from physical and psychological fatigue following training and competition (Kellmann et al., 2018; Meeusen & De Paul, 2018). Insufficient recovery can contribute to the onset of overtraining syndrome, where symptoms include fatigue, performance decline, and mood disturbances (Meeusen et al., 2013), and burnout, which is an experiential syndrome characterized by emotional and physical exhaustion, reduced accomplishment, and sport devaluation (Eklund & DeFreese, 2015). Furthermore, “complete rest” is proposed as “the only efficient remedy” for overtraining (Hauswirth & Mujika, 2013, p. viii) and “genuine rest”, which involves minimizing physical training and cancelling competitions, is considered a key treatment for burnout (Goodger & Kentta, 2010). However, gaps remain in our understanding of the relationships between rest and recovery. Within the recovery literature, rest is seldom defined and the term rest is sometimes used

interchangeably with the term recovery (e.g., Hauswirth & Mujika, 2013, xii) and, other times, is considered conceptually independent of recovery (e.g., Bergeron et al., 2015; Kellmann, 2010, p. 294). Furthermore, while rest is often proposed to contribute to recovery (i.e., as a recovery strategy), rest does not receive the same research attention as other recovery strategies such as massage (Kellmann, 2010).

An additional concern with definitions of rest as physical inactivity is that ceasing physical activity does not guarantee a cessation of psychological activity; for example, worries about sport might endure into athletes' rest days. The concept of “psychological inactivity” has received little research attention within sport psychology (Lemyre & Fournier, 2013) but an exception is the recent study of psychological detachment in athletes by Balk, de Jonge, Oerlemans, and Geurts (2017). Psychological detachment is a concept traditionally associated with the Stressor-Detachment Model of recovery from work in organizational psychology (Sonnetag & Fritz, 2007, 2015). Psychological detachment is conceptualized as a key recovery experience that involves a reduction or cessation of thoughts about stressful aspects of work when away from work; thoughts that would otherwise lead to strain, which comprises deleterious physiological and psychological symptoms. Using a self-report, diary-based design, Balk et al. (2017) provided evidence that psychological detachment moderates (i.e., buffers) the relation between psychological sport demands and feeling

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psychologically recovered. However, no insight was provided in this study about how detachment actually occurs.

Within the field of motor learning, researchers have studied practice-to-rest ratios optimal for learning movement skills, and typically for novel tasks and thus early in learning. A general finding is that distributed practice, which involves practice sessions separated by rest periods ranging from seconds to days, leads to better learning than massed practice, which involves little or no rest between practice sessions (Shea et al., 2000). One explanation for the beneficial effect of rest periods in the order of hours and days is that distributed practice allows for memory consolidation (Shea et al., 2000). Memory consolidation involves the neurobiological metamorphosis of memories from relatively unstable states into a more permanent form, a process that lasts hours to days. New repetitions of the criterion task during this process disrupts the consolidation of the memory of the original repetition of that task, resulting in an impoverished memory. However, conceptualizations of rest within this research area are typically limited to not practicing (i.e., physical inactivity); there is no consideration of the effects of the qualities of rest within distributed practice schedules on motor learning.

Rest is also considered critical in the development of expert motor performance. Based on studies of expert musicians, Ericsson et al. (1993) proposed that *deliberate practice* is necessary to achieve and maintain expert performance in any domain. The emphasis of deliberate practice is on enhancing current performance and thus such practice often involves improving weak areas of performance, which places great demands on the attentional systems and, where movement is required, on the physical systems. Consequently, to avoid exhaustion, daily deliberate practice is limited to ~4 h before rest is required and this practice volume must be broken into multiple sessions limited to ~80 min each and separated by rest. While there have been many studies of the role of deliberate practice in the development of expert performance in sports, most have been focused on the nature of deliberate practice activities. In contrast, little attention has been paid to the nature of the rest periods that necessarily accompany this practice, leading to calls for research on these periods (e.g., Baker & Young, 2014).

In summary, while rest is a key concept within the field of sport psychology, much remains to be known about this theoretically and practically important but empirically under-researched topic. Therefore, the objective of this study was to better understand the psychology of rest in athletes. A better understanding of the meanings, qualities, and functions of the psychology of rest in athletes will augment theory in the recovery, skill learning, and expertise development arenas and provide a stronger basis for determining instruction, skill and talent development programs, and preventative and remediable approaches to athlete health and well-being. Our intent was to advance our current understanding in this arena by investigating athletes' interpretations and experiences of rest with a view to building an initial descriptive model of the psychology of rest in athletes that may offer analytical generalizability (Smith, 2018). Thus, while our empirical focus was on understanding rest in a specific population operating in a particular temporal and environmental context, we believed that any model built from this understanding would have the potential to make sense and have significance and utility in other research with different contexts or populations (Smith, 2018).

We sought to better understand the psychology of rest in athletes by asking the following research questions, for which we found few empirical answers in the extant literature. Do athletes obtain rest within the spaces between training and competing? If so, what constitutes psychologically restful and unrestful experiences in behavioral and mental terms, what brings about experiences of being well and poorly rested, and how does being well and poorly rested affect athletes? And why do athletes need rest; that is, what do they feel they are resting from? In pursuing answers to these questions, we were concerned with psychological rather than physical aspects of rest because, relatively,

the latter have received much research attention (e.g., The American College of Sports Medicine, 2009). We prioritized understanding wakeful rest rather than sleep because links between sleep and athlete performance and well-being are also relatively well-researched (e.g., O'Donnell, Beaven, & Driller, 2018). We also did not consider the special case of resting to recover from injury. Finally, our focus was on rest at the hours-to-weeks scale relevant to rest days and the off-season, rather than at the seconds-to-minutes scale relevant to breaks within games and between sets of movement repetitions during training.

## 1. Method

### 1.1. Participants

Participants were all athletes and support staff members comprising a women's field hockey (hereon simply *hockey*) squad at a UK university. Athletes were 18 females aged 19–24 years ( $M = 20.67$ ,  $SD = 1.47$ ) with 6–20 years' ( $M = 12.78$ ,  $SD = 3.16$ ) hockey experience. Historically, the women's hockey squad at the university ranks in the top five from over 150 squads competing in the British Universities and Colleges Sport system and has a highly selective squad membership. Accordingly, 11 from 18 athletes participating in this study had also represented their home country in an international competition. Support staff members (hereon simply *coaches*) included a head coach, assistant coach, conditioning coach, and sport psychologist; all were male and aged 33–47 years ( $M = 37.00$ ,  $SD = 5.83$ ) with 7–26 years' experience ( $M = 16.50$ ,  $SD = 6.73$ ) in their respective roles.

### 1.2. Design

We employed a qualitative, interview-based method as a starting point for research on this topic. This method is appropriate because it offers an occasion for conversations, which are an indispensable source of rich and new knowledge, and offers flexibility, allowing discovery of unanticipated insights and exploration of avenues of knowing not previously considered (Smith & Sparkes, 2016). We adopted a relativist ontology and constructionist epistemology; that is, we considered that an independent physical world exists but can be interpreted only from our unique perspective, shaped by our interests and experiences (discussed further below). We also adopted a double hermeneutic perspective that considers that our attempts at understanding the psychology of rest in athletes depend on our interpretations of our participants' interpretations of this concept. We employed a semi-structured interview guide because we wanted to ask the participant a set of questions that were on the one hand focused around a specific topic and on the other hand open-ended in nature, affording us the flexibility to explore and discover the many and unknown facets of this little-researched area (Smith & Sparkes, 2016). Participants were first introduced to the study by the researchers, who then engaged participants in conversation about hockey to establish rapport prior to interview questions being posed.

The interview guide employed was created with the primary intention of understanding our participants' understandings of rest in relation to being an athlete. As such, we were motivated to avoid asking questions based explicitly on prior literature and to ask questions that were as open as possible so that we could explore new avenues of knowing. For example, our first question was, what does rest mean to you as an athlete? A series of specific open-ended questions followed that was aimed at yielding insights relating to our research questions. For example, to provide insights into what constitutes effective and ineffective rest, athletes were asked: "Can you recall any experiences where you feel you were able [and, as a separate question, unable] to achieve effective rest during the season?" Question wording was adapted when interviewing coaches. Where appropriate, an attempt was made to further unpack responses to questions using detail-oriented and elaboration explorations (Smith & Sparkes, 2016) and

probes for recall of a specific episode providing an example of a concept being discussed abstractly (Eccles, 2012). Given the study objective, priority was given to unpacking responses concerned with psychological (vs. physical) aspects of wakeful rest.

### 1.3. Procedure

Ethical approval was obtained from the host institution. All participants provided informed consent. Pilot interviews allowed us to practice using the interview guide and identify questions that were ineffective in opening up conversation and appeared difficult to understand (Smith & Sparkes, 2016). We identified several such questions during the first two pilot interviews and adapted these questions to increase their effectiveness and comprehensibility. We tested the revised questions during two subsequent pilot interviews and found the questions to be more effective and comprehensible, and consequently we then ceased the piloting process. In the main study, a purposeful sampling strategy was used to obtain: (a) a team of athletes operating at a level of performance that would make rest of genuine importance in their lives and whom we could access within the season when they were experiencing rest while operating at this level; and (b) an entire squad comprising athletes and coaches, allowing us to hear the different voices within the squad and thus to gain nuanced insights into how rest is interpreted and experienced with this unit. The university's director of sport was a gatekeeper, introducing us to the squad's head coach. The head coach organized a meeting with all athletes where he stated that study participation was voluntary and unrelated to team selection. Participants were then invited by us for interview. All 18 athletes and 4 coaches agreed to an interview. Interviews were conducted in a quiet location in the program training venue, audio-recorded, and lasted 42–77 min ( $M = 60.73$ ,  $SD = 9.24$ ). Interviews were transcribed verbatim, excepting the removal of personal identifiers, resulting in 329 pages of single-spaced text.

### 1.4. Analysis

A content analysis of the transcribed data was undertaken (Weber, 1985). The objective of content analysis is to identify concepts within textual data. Traditionally, content analysis has not been aligned with the relativist ontological and constructionist epistemological stance we adopted here. However, we recognized that the process of identifying concepts in interview data is shaped by the researchers undertaking this process and by the broader research context. Thus, we chose to consider our analysis in relation to a relativist ontology and constructionist epistemology. Within content analysis, concepts are identified within raw textual data and categorized according to shared characteristics, which can result in concept hierarchies. Within this study, all quotes were inspected and those related to rest selected for subsequent analysis. Next, selected quotes were read carefully to identify preliminary concepts related to rest. For example, quotes like “this year I lived with hockey people. We don't talk about hockey all of the time but you're still with hockey friends. So, it was definitely nice to not have to talk about hockey with home friends and family” led us to formulate two preliminary concepts: (a) resting involves thinking less about one's sport, where (b) a reduction in such thinking is aided by avoiding people involved in that sport because they serve as cues to think about that sport. As more data were analyzed, concepts were built upon, modified, and sometimes merged with, or split into two or more concepts. For example, as more data were analyzed, evidence was obtained that, in addition to people, other forms of cues to think about one's sport included sport-related equipment and locations, which led to the expansion of the cue concept to include these cue forms. Concept identification was augmented by: informal note-taking, including during interviewing and transcribing; memo writing; and creation of hand-drawn and electronic concept hierarchies, which were useful in understanding relationships between concepts and the overall structure

and coherence of the model.

We adopted methods to help maximize openness to alternative interpretations of data. We were reflexive about our interpretations in the light of our perspectives and experiences and noted our reflections during analysis. We also employed a critical friend, a former student-athlete, who listened to our interpretations of the interview data and offered critical feedback. Finally, we obtained member reflections on the results from two athletes from the main study. We conducted only two such interviews to minimize disruption to the squad during the busy season and we interviewed athletes rather than coaches because coaches were more difficult to access, again for reasons of busyness.

### 1.5. Reflections on positionality

Our positionality within the research process undoubtedly shaped our constructions of concepts. First, while we were motivated to avoid asking interview questions based explicitly on prior literature and instead ask open questions to explore new avenues of knowing (described above), our awareness of the literature undoubtedly influenced the framing of our interview questions. For example, *a priori*, we conjectured that there might be more and less effective ways for athlete to rest. These considerations likely were based on our understanding of literature, including those reviewed above, indicating that there are more and less effective ways to practice and recover following practice. Our conjecturing in this regard led us to ask the following interview questions: “Can you recall any experiences where you feel you were able [and, as a separate question, unable] to achieve effective rest during the season?”

Second, interviewer-interviewee positioning likely shaped co-constructions of understanding. For example, excepting gender, to the athletes, the interviewer (male) was an “insider”, being a young, white, educated student-athlete wearing “university colors” and frequenting the university sport center, where the interviews were held. On the one hand, this insider position likely aided interviewer-interviewee rapport but, on the other hand, athletes might have been reticent about disclosing vulnerability (e.g., need to rest) owing to pressures to present as resilient to a “peer athlete”. To the coaches, the interviewer was largely an outsider. Coaches are rarely asked to explain their training methods to those outside their squad and during the interviews and analysis, we could detect the coaches' desire to present as acting in the interests of their athletes' well-being and academic progress. Third, while we strived to be open to interpretations of data (described above), our interpretations of interview data were undoubtedly shaped by our subjective knowledge and perspectives and especially our knowledge of the psychology field. For example, our framing of a concept of resting as involving reduced external control was influenced by our understanding of self-determination theory.

## 2. Results

We identified various concepts within the analysis. Below, we “show” as well as “tell” the reader about these concepts using common phrases and more detailed quotes from the participants. We provide some insight into the interviewer's role in co-constructing the data by including his voice within each block quote (Smith & Sparkes, 2016); within these quotes, the interviewer is abbreviated to “I”, athletes to “A”, and coaches to “C”. Excepting the use of one table, we chose to describe concept hierarchies within text rather than via tables because we felt this approach allowed for more effective communication of information.

### 2.1. The state of feeling rested

The extent to which a player feels rested (also referred to below as *rest level*) varies over time. Athletes conceive of feeling rested as involving a physical aspect and a “mental” aspect, which they consider as

largely independent. Our focus hereon is on the mental aspect, which has several characteristics. Mentally rested athletes feel “fresh”; poorly rested athletes feel “tired”. Mentally rested athletes value and appreciate their sport but, when poorly rested, athletes can “forget why you’re doing it”. Mentally rested athletes feel highly motivated to engage in their sport and consequently apply more effort to it. Poorly rested athletes have “had enough” and “look forward to stopping”. Athletes also enjoy their sport more when well rested than poorly rested. Athletes also attribute poor health to being chronically poorly mentally and physically rested. Athletes find it is harder to increase their level of mental rest than physical rest; one reason for this is that stopping physical training is easier than stopping thinking about their sport.

## 2.2. The resting process

One’s level of rest is increased via engagement in a process of resting. Athletes consider sleep and resting while awake (hereon, wakeful resting) as key modes of resting. Our focus hereon is on wakeful resting. Athletes conceptualize wakeful resting as: (a) a reduction in, or “break from” psychological experiences associated with sport participation that are deleterious to feeling well rested, which we term *deleterious psychological experiences*; and, for each such experience, (b) an increase in a contrasting psychological experience that contributes to feeling well rested, which we term a *resting experience*; see Table 1. We now describe each deleterious experience and, for each, outline behavioral, social, and environmental conditions that facilitate a reduction in that experience and an increase in the contrasting resting experience.

### 2.2.1. Always thinking about one’s sport

Athletes feel they are “thinking about hockey all of the time” during the season. One reason for this constant thinking is the athlete’s *constant engagement in sport-related activities* including *program activities* (e.g., training), support *activities* that support program activities (e.g., preparing meals), and *social activities* that typically involve teammates and conversations about their sport.

I: What does rest mean to you? A11: Time to let my body recover. Time to have like a mental break from it all. I: Can you tell me more maybe about the mental break? A11: We have a lot of meetings and constant things to watch and video analysis online and team sheets you have to think about, lots of things like that, and then pasta bonding with the team. [A rest is] a couple of days off completely not having to think about hockey.

A second reason for this constant thinking is the *importance of the sport* to the athlete. Athletes are invested in their sport and embedded in a culture of high expectations for performance. These pressures increase the tendency to be always thinking about one’s sport.

Always thinking about one’s sport is deleterious to feeling well rested. Such thinking elicits feelings of anxiety due to the association of this subject of thought with pressures to perform and, consequently, is mentally effortful. In turn, *always* thinking about one’s sport, due to

constant engagement in the sport, is mentally fatiguing and leads to reduced motivation to engage in the sport. Thus, a key resting experience involves stopping thinking about, or “switching off” from, one’s sport (RE 1 in Table 1), as the follow quote shows. I: What does rest [for athletes] mean to you? C1: Time away from the sport where ... you can switch off mentally from anything to do with the sport altogether.

Switching-off is facilitated by achieving a focus on a subject unrelated to one’s sport, which makes it difficult to think concurrently about one’s sport. Achieving this focus is aided by engaging in activities different from one’s sport such as “watching TV”. Switching-off is also facilitated by avoiding cues serving as reminders of one’s sport, including artefacts (e.g., hockey sticks) and physical (e.g., training facilities) and social (e.g., teammates) environments. A key means of avoiding these cues is to achieve a perception of distance or “escape” from them, which is aided by geographically distancing oneself from the cues or “leaving town”.

I: What would you say you are resting from the most? A7: I’d probably say the people, like the social aspect of it. One of my best friends is on the team and when we’re together we’ll be talking about whatever but it will always be, like, hockey is just shoved in there. It will always come up in our conversation because it’s such a big part of our lives but when I’m with my friends who don’t play hockey it’s completely different. We talk about other meaningless rubbish but it’s quite nice to just have that complete break. I kind of lose my way with it sometimes just because it’s so intense.

During the member reflections process, one athlete responded to the finding that physical environments cue thoughts about hockey by asserting that she had not considered during her original interview how she does not like to see a hockey pitch or images of one (e.g., online) on rest days because this experience leads her to think about her sport. This reflection provided a new and additional insight into the cue-avoidance concept.

Also, because always thinking about one’s sport is mentally fatiguing, athletes not only require a break from always thinking specifically about one’s sport but also from sustained effortful thinking generally. Thus, a key resting experience involves experiencing reduced cognitive demands (RE 2 in Table 1), which is aided by engaging in activities and environments imposing low cognitive demands (e.g., reading fiction) and inhibited by engaging in activities and environments imposing high cognitive demands (e.g., studying).

### 2.2.2. Being externally controlled

Athletes feel that their lives in the season are largely controlled by a relatively fixed program schedule (e.g., training) and program directives on eating, sleeping, and socializing. External control is deleterious to feelings of being well rested in two ways. First, athletes want to have control over their lives, which they express as “my time”. Consequently, external control by their program reduces motivation to engage in the program.

I: And when you are getting rest in the off-season, what would you say that you are resting from? A4: Like not having to stick to a

**Table 1**  
Deleterious psychological experiences and contrasting resting experiences associated with athletes’ conceptualizations of wakeful resting.

Deleterious psychological experience	Resting experience (abbreviation)
Always thinking about one’s sport	Reduction in thinking about one’s sport (RE 1) Reduction in effortful thinking generally (RE 2)
Being externally controlled	Assuming internal control (RE 3)
Tedium	Variety (RE 4)
Stress from performance demands	Reduction in stress from performance demands (RE 5)
Stress and frustration associated, respectively, with work-related and personal non-sport opportunity costs	Reduction in stress associated with work-related opportunity costs (RE 6) Reduction in frustration associated with personal opportunity costs (RE 7)

schedule that someone else is putting in front of you, you're able to just do what you want whenever you want and I think that's a big factor to just unwind from a whole season of having it very structured from someone else, and then you've got your time to just do what you want.

Second, external control reduces athletes' ability to regulate their resting; for example, the fixed program schedule means athletes are unable to rest when they feel they need it. Thus, a key resting experience involves assuming control over one's life (RE 3 in Table 1).

### 2.2.3. Tedium

As the season progresses, athletes' feel their lives begin to lack variety and become tedious, which is deleterious to feelings of being well rested. Specifically, experiences of tedium reduce athletes' motivation to engage in their sport programs. Over the season, athletes spend much time following the same routines (e.g., training schedules) and in the same physical (e.g., training venues) and social (e.g., teammates) environments, encapsulated by a coach as: "Same place, same time, all the time, all week". Thus, a key resting experience involves experiencing variety in routines and social and physical environments (RE 4 in Table 1).

### 2.2.4. Performance demands

Training and competition activities within a high-level sport program are mentally demanding, and experiences of these demands are deleterious to feelings of being well rested. These activities require much concentration, which is cognitively demanding: "You are exhausted after a tough session and you're also mentally tired because you're trying to concentrate." These activities are also emotionally demanding given pressures to perform. Thus, a key resting experience involves a reduction in the mental demands of training and competing (RE 5 in Table 1), which is facilitated by a reduction in training and competing.

### 2.2.5. Non-sport opportunity costs

Due to sport commitments, athletes often feel unable to pay enough attention to life outside their sport program. Outside sport, athletes must undertake *work activities* (e.g., paid work, studying) and feel stressed when unable to due to sport commitments. Athletes also want to engage in *personal activities* (e.g., relationships & hobbies) and are aware that university provides a unique opportunity to explore new areas of life: "You want to make the most of your university experience but obviously you also want to make the most of your hockey". Athletes experience frustration when unable to engage in personal activities due to sport commitments. The stress and frustration arising from these opportunity costs is deleterious to feelings of being well rested. Thus, key resting experiences include a reduction of stress associated with work-related opportunity costs (RE 6 in Table 1) and of frustration associated with personal opportunity costs (RE 7 in Table 1); experiences that are facilitated by being able to engage in work and personal activities, respectively.

## 2.3. Wakeful resting during the season

Opportunities for wakeful resting experiences differ between the season and off-season. The best opportunities in the season to obtain these experiences are the two rest days scheduled each week by the coaches, which usually involve no program activities. Athletes often begin rest days by "catching up" on work activities (e.g., studying) that were necessarily postponed due to sport commitments. Catching up on work activities reduces the stress associated with this form of non-sport opportunity cost that has been building while the athlete has been engaged in sport commitments (RE 6). However, work activities, and studying especially, often require effortful thinking, reducing time available during rest days for low-cognitive-demand activities (RE 2).

Athletes are often aware of the trade-off between these two resting experiences and thus prioritize early completion of work to leave time later for low-cognitive-demand activities:

I: Do you think it's [resting] really up to the individual and what's best for them? A14: I think so, because what I would class as me actually resting would be doing ... I need to do my work. On a Sunday I'll do my work and then at about 5 o'clock I'll actually rest and not do any more work and I'll be relaxed because I've done some work. On rest days that I don't do any work, I think I'm resting [but] I'll be stressed out because I have not done any work ... I feel like that is not effectively resting.

Following any required work activities, athletes often then engage in low-cognitive-demand activities (e.g., watching TV, reading, surfing the web, "eating nice food") and within low-cognitive-demand physical environments (e.g., at home, in bed, feet up) and social environments, which often include being alone (RE 2). Being alone avoids the demands of social interaction: "I would view time by myself as more of a rest because you're not having to like interact with anyone, so it's just like a shut-down kind of." These social environments also include meeting a few close friends in a cafe or pub for "chilled social time" and "a few drinks", which contrasts with "nights out", involving late nights, noisy venues, large groups, and much alcohol. Activities pursued during rest days also often involve subjects (e.g., reading fiction), friends, and/or conversations unrelated to the athlete's sport, which reduces cues to think about one's sport (RE 1). With some exceptions (e.g., work activities), rest days often involve a sense of decreased external control (RE 3). For a few hours, athletes have "no obligations" and can select their own activities. Being alone also enhances a sense of internal control because it removes requirements to consider others' needs. Rest days also afford increased variety in life (RE 4). Athletes are able to follow a routine or be in an environment (e.g., cafe) that they describe as "just something I would not normally do on a typical day". Finally, rest days allow a break from the mental demands of performing in training and competition (RE 5).

However, the limited time available on rest days for wakeful resting not only leads to trade-offs between resting experiences, as described, but also means that little time is available for personal activities, leading to frustration (RE 7). Also, weekly rest days are rarely scheduled contiguously, which would provide time to "leave town" to "escape" cues to think about one's sport (RE 2): "If we didn't have games every weekend, I would go home for a weekend during term. But, if not, just removing yourself from DB [a training venue] and going ... somewhere different outside of here [is useful]". Consequently, while athletes are able to increase their level of rest via wakeful resting during rest days in the season, this increase is insufficient to avoid feeling increasingly poorly rested as the season progresses.

## 2.4. Wakeful resting during the off-season

The off-season offers opportunities to obtain all resting experiences. Sport-related program, support, and social activities cease during the off-season, reducing the need to think about one's sport and providing time for activities unrelated to that sport, which also reduces thinking about the sport (RE 1). The off-season is typically spent away from university, which also helps avoid sport-related cues (RE 1). In the off-season, little training and competing means that athletes: assume much control over their lives (RE 3), obtain rest from mental demands associated with these activities (RE 5), and experience more variety in their routines (e.g., meal timing) and physical and social environments (e.g., family vacations) (RE 4). Athletes also have much time for work and personal activities (RE 6 & 7); they can do "things that you would've like to have done [in the season] but you didn't have the opportunity to do because of your commitments to hockey". Athletes can be less mindful during the off-season about trade-offs between resting experiences because there is enough time to obtain all resting experiences. For

example, an athlete can engage in a personal activity (RE 7) imposing a high cognitive demand knowing time is available subsequently within the off-season to engage in low-cognitive-demand activities (RE 2):

I: And, would you say that it's [rest] taken more seriously or less seriously by your teammates within the season? A16: I think because rest is important when you've got such a tight schedule and you've only got a specific amount of time in which you can rest, it's very important that you get that rest at that point. But, if you've got the off-season and you're not doing much and you've got a lot of time to rest, then you don't have people being like "you've got to rest tonight" because you can rest the following night because you've got free time. Whereas, during the season you've got to rest at certain points.

### 2.5. A key barrier to, and strategies for resting

We now describe a key barrier to resting during the season, termed the *balance problem*, specific factors contributing to the problem, and strategies adopted in response to both the problem and the contributing factors. Athletes struggle to balance engagement between areas of their lives, which include sport program, work, and personal activities, and often take on too many commitments, reducing time available for resting. Strategies adopted in response to this balance problem include athletes' *use of organizational skills* and coaches' *adjustment of program activities* (e.g., training) according to athletes' ongoing sport and study commitments. Factors contributing to the balance problem include *program creep*, whereby coaches schedule additional program activities on rest days. These activities often involve no physical training but promote thinking about one's sport (RE 1) and feelings of external control (RE 3):

I: And how would you say that a break is different from rest, in your own mind? A11: We have rest days during pre-season but I wouldn't ever say we have breaks in pre-season. A rest day [is] where we wouldn't do anything physical, but we could still have a meeting about hockey. In my opinion a break is like: I don't think about hockey, I don't do anything about hockey for a couple of days.

Other factors include *travel to competitions*, *other sport commitments* (e.g., representing one's county), and *over-conformity*, which can lead athletes to engage in sport-related activities on rest days. *Peaks of work*, especially study deadlines, also reduce time for rest and a response to this problem includes adjusting program activities, as described. Finally, *nights out* are considered central to the university experience; not being able to engage in this personal activity increases frustration (RE 7), which decreases one's level of rest. However, a trade-off is that nights out impose high cognitive demands (RE 2) and affect sleep, which also decrease one's level of rest, as reflected in the following quote. I: Within [a typical in-season] week, what are some of the barriers these athletes have to face in achieving effective rest? C3: Going out drinking, partying ... that's kind of huge. Responses to this barrier include *social calendars* displaying when nights out are acceptable given sport commitments, a *buddy system* whereby seasoned students mentor new students about nights out, and *team agreements* about the timing of nights out relative to sport commitments.

### 3. Discussion

The objective here was to better understand the psychology of rest in athletes. To this end, we built an initial descriptive model of the psychology of rest in athletes from qualitative data obtained via interviews with skilled student-athletes. We now reconcile our conceptualizations of being well and poorly rested, and of the process of resting, with extant psychological theory and research. We then propose how our model of rest can inform current theory and practice concerning recovery, skill learning, and expertise development in

athletes.

Our conceptualizations of being well and poorly rested have commonalities with the concepts of athlete engagement and burnout syndrome, respectively. Being well rested in our model involved a psychological state of feeling fresh, and valuing, being motivating toward, and enjoying one's sport. This state appears consistent with the notion of athlete engagement (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007; Podlog et al., 2015). Engaged athletes are those experiencing enduring positive cognitive-affective states including perceptions of confidence, vigor, enjoyment, and dedication. Being poorly rested in our model involved states consistent with the "theoretical opposite" of athlete engagement (Podlog et al., 2015, p. 416), which is the burnout syndrome (Eklund & DeFreese, 2015). Symptoms associated with burnout syndrome include emotional and physical exhaustion, devaluation of one's sport, and amotivation (Eklund & DeFreese, 2015). Nonetheless, while the psychological states associated with being well and poorly rested in our model appear similar to the states and symptoms of engagement and burnout respectively, it must be considered that engagement and burnout are both enduring experiential states (Eklund & DeFreese, 2015; Podlog et al., 2015) and burnout is the result of the cumulative effects of prolonged sport-related demands (Eklund & DeFreese, 2015). In contrast, the states of being well and poorly rested appear to be more transitory in nature. As such, we conjecture that being well rested and poorly rested are merely steps on the trajectory towards experiences of engagement and burnout respectively, and steps that are relatively easily reversed via insufficient and sufficient resting, respectively. Accordingly, studies indicate that insufficient rest is a key contributor to burnout (Cresswell & Eklund, 2007).

Our proposal that the resting process involves both sleep and wakeful resting experiences is reflected in the literature on mental fatigue. For example, within Kaplan's (1995) Attention Restoration Theory, sleep is "useful" but "insufficient" for reducing attention fatigue following demanding tasks, which also depends on wakeful resting. In our model, wakeful resting experiences include reduced thinking about one's sport because such thinking leads to anxiety and eventually mental fatigue. This concept parallels the psychological detachment concept from the stressor-detachment model (SDM) of psychological recovery from work (Sonnentag & Fritz, 2007, 2015). In this model, work-induced strain is reduced via key recovery experiences following work including psychological detachment, which involves "not thinking about one's job" or "switching off".

Also paralleling our model is the proposal within SDM that switching off after work is aided by a focus on a non-work subject, which is facilitated by engaging in non-work activities (Sonntag & Fritz, 2007). Our proposal that these (non-sport) activities must also impose only a low cognitive demand to provide rest from prolonged effortful thinking is also reflected in the SDM, where another key recovery experience involves relaxation activities requiring "little physical or intellectual effort". These findings also compare with those of a public survey of rest by Hammond and Lewis (2016), where undemanding activities (e.g., listening to music) were highly rated in terms of affording rest. Also, in our model, low-cognitive-demand physical and social environments included being alone at home or with close friends in a relaxed environment outside the home. Accordingly, in SDM, relaxation involves "few social demands" (Sonntag & Fritz, 2007) and being alone was associated with activities considered restful in the survey by Hammond and Lewis (2016). Collectively, these findings accord with research indicating that social interaction, while beneficial to overall well-being, is mentally fatiguing (Leikas & Ilmarinen, 2017), leading individuals who are already tired to withdraw socially (Repetti, 1989). Finally, switching off in our model is facilitated by avoiding cues to think about one's sport. A similar concept is evident in SDM, where cues outside work, including meeting co-workers, can prime workers to think about work and thus reduce psychological detachment (Sonntag & Fritz, 2007). Cue forms in our

model include sport-related people but, in addition, extend to sport-related physical environments (e.g., training facilities) and artefacts (e.g., sport equipment).

Rest in our model also involved obtaining a break from external control and assuming internal control. This concept is also reflected in SDM (Sonnentag & Fritz, 2007) in which a key recovery experience involves assuming control over one's post-work schedule. The two key effects of assuming control in our model are also reflected in SDM. First, within self-determination theory (Ryan & Deci, 2000), assuming control is an inherently rewarding psychological experience, satisfying a basic psychological need for autonomy. Accordingly, in athlete populations, autonomous motivation is negatively associated with deleterious psychological experiences such as burnout (Eklund & DeFreese, 2015). However, sport programs (and, in SDM, workplaces) tend to invoke less self-determined forms of motivation; for example, in the present study, there were penalties for program violations (e.g., missed training), consistent with external regulation. Second, in our model, assuming control allows better self-regulation of resting; athletes can train and rest according to how they feel physically and psychologically. This concept is reflected in the SDM as the option to choose non-work activities "supportive for the recovery process" (Sonnentag & Fritz, 2007) and in the organizational psychology literature generally, where a challenge for organizations is matching employer-imposed rest schedules with employees' experiences of fatigue (Tucker, 2003).

In our model, rest also involves a break from experiences of tedium resulting from a perceived lack of variety in the behavioral routines and the physical and social environments associated with a sport program. While the tedium of repetitive training drills (Farrow & Robertson, 2017) has received research attention, there is a paucity of research on tedium and variety in athletes and the general population (González-Cutre, Sicilia, Sierra, Ferriz, & Hagger, 2016). Nonetheless, athletes' daily routines have been described in some studies in ways akin to descriptions offered by our participants; that is, as involving the "same" daily activities, places, people, and food (Macquet & Skalej, 2015; Stambulova, Stambulov, & Johnson, 2012). Our theorizing that tedium has deleterious motivational consequences also accords with motivation theory. Novelty, defined as something that "deviates from everyday routine", has been proposed as a basic psychological need inherent to self-determined motivation (González-Cutre et al., 2016). From this perspective, rest involves satisfying the athlete's need for variety by experiencing routines and environments different from those associated with their sport program.

Resting in our model also involves a reduction in the mental demands, both cognitive and emotional, of training and competition. The perceptual-cognitive (Williams, Ford, Eccles, & Ward, 2011) and emotional (Mellalieu, Neil, Hanton, & Fletcher, 2009) demands of sports are challenging, leading to mental fatigue (Smith et al., 2018). In our model, the principal way to reduce these demands is to cease training and competing, which has parallels in the research on burnout, where a key contributor to emotional and physical exhaustion is the mental demands of training and competing (Cresswell & Eklund, 2007). Such exhaustion is less likely if sufficient rest, which involves ceasing training and competing, is provided (Cresswell & Eklund, 2007).

Our model also proposes that sporting commitments reduce time available to attend to non-sport areas of life including work and personal activities, leading to increased stress and frustration respectively. Resting involves opportunities to engage in non-sport areas of life because such engagement reduces this stress and frustration. These concepts are consistent with the concept of *other priorities* (i.e., priorities outside sport) theorized to affect sport commitment (Scanlan, Russell, Beals, & Scanlan, 2003). Not being able to attend to these priorities due to sporting obligations leads to a sense of lost opportunities and in turn negative affect, which, over time, undermines sport commitment (Scanlan et al., 2003). This sense of lost opportunities may be particularly frustrating for student-athletes entering early adulthood, a developmental stage characterized by enhanced independence and

identity formation (Adams, Ryan, & Keating, 2000). As such, student-athletes likely have an inherent desire to explore new experiences and are aware that university provides a unique opportunity to satisfy this desire. However, their sport involves many commitments, which thwarts this desire and creates frustration.

Our model has more general implications for theory and practice concerning recovery, motor skill learning, and expertise development in sports. Rest is considered key to recovery and is typically conceptualized as "inactivity" (e.g., Kellmann et al., 2018); that is, with the cessation or reduction of physical participation in training and competition. We propose that recovery also depends on a process of resting mentally, where this process involves both sleep and wakeful resting involving specific resting experiences. The extant recovery literature does contain some considerations of recovery strategies aligned with the resting experiences proposed within our model. For example, scholars have asserted that sport-related boredom can be alleviated by engaging in activities different from sport such as reading (Meeusen & De Paul, 2018; Robazza, Forzini, di Fronso, & Bertollo, 2018). However, in contrast to our theorizing, we have found no evidence that these proposals are based on empirical studies.

Our model also has implications for best practice concerning recovery. We propose that coaches typically appreciate the need for physically inactive rest days and sufficient sleep but underappreciate how recovery also depends on wakeful resting involving specific resting experiences. In the present study, the coaches we interviewed were concerned that, when we interviewed their athletes, the athletes would report not being provided with sufficient rest. Based on these concerns, the coaches proposed to us in their interviews that they could schedule extra physical recovery sessions on rest days that involved, for example, light jogging. This proposal evidences an interpretation of rest in physical (vs. psychological) terms and overlooks how sessions scheduled for rest days reduce opportunities for athletes to think about something other than their sport, experience internal control, and so on; that is, to engage in the process of resting psychologically. Better practice involves increasing awareness of the importance of resting psychologically via education programs and creating a common conceptual vocabulary of the psychology of rest for use by practitioners. For example, athletes in our study talked of being taught how to "switch on" (i.e., psychologically prepare to perform) but not how to "switch off" after performing to achieve desired resting experiences. Our model provides a basis for guidance to this end: If switching off is considered a break from always thinking about one's sport, then athletes should engage in activities different from one's sport (i.e., to achieve a focus on a different subject) and avoid their sports equipment, training facilities, and teammates, perhaps by spending time out of town when possible (i.e., to avoid cues to think about one's sport).

Our model also has implications for motor skill learning. There is little research on how the qualities of rest breaks within a distributed practice schedule affect memory consolidation for motor tasks (Shea et al., 2000). However, studies of learning on cognitive tasks indicate that consolidation following practice is facilitated by post-task activities imposing low (vs. high) cognitive demands because such tasks involve few encoding processes and hence interfere little with consolidation (Craig & Dewar, 2018). Thus, athletes' skill learning following training may be retarded by rest days that involve a reduction of physical activity but not mental activity, such as that involved in a team video analysis session.

Within the deliberate practice conceptual framework, deliberate practice and rest are proposed as equally important to developing expertise (Ericsson et al., 1993). On this basis, and in the light of our proposed model, two lines of future research should be pursued. First, while researchers have focused on identifying the types or qualities of deliberate practice activity associated with the development of expertise in sport, there have been no studies of the qualities of rest activity associated with the development such expertise, despite calls for such studies (Baker & Young, 2014). Our model provides a platform for

examining these rest qualities. Specifically, to what extent are wakeful resting experiences, as proposed in our model, associated with the development of expertise in sport? Second, studies have provided evidence that expert athletes deliberately arrange and create practice activities and environments in ways that maximize the utility and quality of practice sessions (e.g., Eccles, Ward, & Woodman, 2009). Future research should be aimed at understanding whether and how expert athletes deliberately arrange and create resting activities and environments in ways that maximize the utility and quality of episodes of wakeful resting.

Our research was limited in some important ways. First, we spoke with each participant one time and yet key concepts within our model have dynamic qualities: Resting is considered a process and opportunities to rest change with the annual cycle. Insights into these concepts would be obtained by longitudinal studies of resting (cf. Eklund & DeFreese, 2015). Second, while interviews are a very useful source for understanding experience and meaning, they are not privileged in this regard, and future research should consider how alternative qualitative methods can provide unique and complementary insights into the psychology of rest in athletes (Smith & Sparkes, 2016). For examples, diary methods could be used to document daily experiences of resting and photographic and video methods would yield unique insights into the social and physical environments and moments affording effective resting.

In conclusion, to better understand the psychology of rest in athletes, we built an initial descriptive model concerned with this topic from qualitative data obtained via interviews with skilled student-athletes. Within this model, being well rested is considered to be a psychological state involving feeling fresh, and valuing, being motivating toward, and enjoying one's sport. Athletes become well rested by engaging in a resting process, which includes sleeping and wakeful resting. Wakeful resting involves key resting experiences such as not thinking about one's sport. These experiences are obtained by engaging in specific activities and physical and social environments. Obtaining resting experiences during in-season rest days is challenging due to limited time but more time is available to these experiences during the off-season. We believe our generated model of the psychology of rest in athletes may offer analytical generalizability (Smith, 2018) by having significance and utility within research with different sport contexts and populations that is concerned with recovery, skill learning, and expertise development. We look forward to future research on this exciting facet of the psychology of sport.

#### Declarations of interest

None.

#### Acknowledgements

The authors would like to acknowledge the kind contributions made by Chris Ehrhardt of the Department of Psychology at Florida State University and the athletes and support staff who were participants in this study.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.psychsport.2019.05.007>.

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