

# Recovery from Work-Related Stress: A literature review

## REVIEW

Occupational stress adversely affects both the individual and the organization. Because of its economical and health relevance, much research has been devoted to employee recovery from work stress. Defined as a process of replenishing resources, recovery has been suggested to be important in reducing work-related fatigue, thereby making individuals feeling ready again to meet the demands at work. This literature review systematically summarizes findings from research on recovery. The literature search was conducted based on the PsychInfo database. Forty-eight journal articles were included in the review. Overall, studies consistently implicate that daily recovery is especially important to avoid long-term strain reactions. Moreover, research has found specific off-job activities as well as experiences attached to these activities to promote recovery, thereby improving performance, health, and well-being. Taken together, results imply that both individuals and organizations should be concerned about employee recovery and possibilities to support it during work and non-work time.

**Keywords:** fatigue; recovery experiences; recovery settings; well-being; work-related stress.

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## FATIGUE AND RECOVERY AFTER WORK

Today's work force is confronted with deteriorating working conditions due to the economic crisis, the increasing globalization, the establishment of a free market, and demographic shifts (e.g., raising tendency of the retirement age)(Eurofound, 2012; European Commission, 2010). As a result, job stressors such as extended working days, blurred boundaries between work and family, and persistent in-work poverty are accelerating (Eurofound, 2012). Leka and Cox (2008) highlighted that the huge competitive pressure governing the labor market urges employees to meet the job requirements no matter which effort must be rendered. According to the authors, these developments take their toll on employees' well-being; more than 40 million workers in the European Union suffer from work-related stress. Due to this, organizational costs are heightened by elevating rates of fluctuation and absenteeism (Leka & Cox, 2008).

When employees invest effort in order to meet the demands made on them at work, personal resources are depleted resulting in an exhausted state called fatigue (Åkerstedt et al., 2004). This state is identified as a core component of several diseases, such as the burnout syndrome which can be defined as a multi-dimensional work-related mental health complaint characterized by mental fatigue (emotional exhaustion), negative perceptions about other people (depersonalization), and a crisis in professional competence (reduced personal accomplishment)(Åkerstedt et al., 2004; Hakanen & Schaufeli, 2012).

Efficient recovery can lead to the rebuilding of the resources depleted during work (Geurts & Sonnentag, 2006), thereby promoting employee health. This process of replenishing resources is, however, easily impeded (e.g., Sonnentag & Bayer, 2005). Thus, to fully understand the concept of recovery, it is not only important to understand when, how, and why employees recover, but also to gather information on factors impeding the recovery process.

A systematic literature search was conducted using the the PsychInfo database to gather the knowledge on recovery that has been generated. The keywords being used were: burnout, chronic fatigue, chronic strain reactions, fatigue, job stressors, job demands, occupational health and well-being, recovery, recovery effects, recovery outcomes, work demands, and work performance. From the 129 initially identified articles 48 articles from peer-reviewed journals were included in the review. All articles used were considered thematically relevant on the basis of titles and abstracts. That is they addressed either when, how, or why employees recover from work-related stress or investigated factors that hinder or promote recovery. With the exception of three classic articles, which were published in the late eighties and nineties, all articles were published in the period from 2000 to 2012. To systematically summarize the findings from these articles, theories dealing with recovery will be discussed first. Next, information on perspectives from which recovery can be approached will be provided, namely: a) recovery settings, b) recovery as a process, and c) recovery as an outcome. Finally, implications and future research directions are discussed in conclusion.

## THEORETICAL FRAMEWORK

It is well-proven that work-related stress negatively impacts employees' health and well-being (see Nieuwenhuijsen, Bruinvels, & Frings-Dresen, 2010 for review). McEwen's (2006) allostatic load theory provides a framework which describes how this might happen. In the face of potential stressors, allostatic systems, such as the autonomic nervous system and the immune system, promote adaptation. For example, in case of threat, the sympathetic nervous system releases epinephrine and norepinephrine. In response, heart rate and blood pressure increase, pupils dilate and muscles get tensed – the organism is ready to fight or flight. When the threat ceases, the parasympathetic nervous system is activated. It inhibits the sympathetic adaptive responses, thereby maintaining balance (homeostasis). This process of achieving homeostasis is called *allostasis* (McEwen, 2006). However, as a result of repeated or prolonged stress this balance in systems promoting adaptation can be disrupted. McEwen uses the term *allostatic load* to describe the condition wherein allostatic systems do not perform normally. For example, the immune system may be hyperactive which can cause allergic responses. Geurts and Sonnentag (2006) suggested that recovery may help to explain the relation between acute stress reactions in response to stressful work characteristics and chronic health impairment in the long run. They argued that recovery may intervene in this strain process.

According to Siltaloppi, Kinnunen, Feldt and Tolvanen (2012) need for recovery is an indicator of the long-term stress effects (i.e. allostatic load). However, there are only few theories that deal with the role of recovery from occupational stress (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). According to Meijman and Mulder's (1998) effort-recovery model, effort expenditure at work inevitably causes acute load reactions such as fatigue. Fatigue relates to the impairment of mood, motivation, psychomotor, and cognitive functions such as decreased reaction times, memory, and information processing (Querstret & Cropley, 2012). Normally, fatigue and other acute load reactions are released during after-work hours resulting in recovery and reconstruction of the baseline levels. However, the model suggests that recovery occurs only if the systems that are taxed during work are not used after work. Thus, when individuals are exposed to work during after-work hours or to demands similar to those of work, stress-related load reactions are prolonged and recovery is impeded. Consequently, the employee will start the subsequent workday in a suboptimal state and work will cost extra effort. As a result acute load reactions may accumulate and become chronic, causing impaired well-being (Meijman & Mulder, 1998).

According to Hobfoll's (1989) conservation of resources theory people have a certain amount of resources which they strive to obtain, retain and protect. Resources can be objects or conditions, such as housing situation or marriage; personal characteristics, such as self-esteem; and energies, such as money or time. Environmental circumstances exhaust or threaten people's resources, thereby producing psychological stress. To recover from stress, people have to restore those resources or invest in new resources. For example, an employee's self-esteem might be affected by negative feedback. Consequently, he or she feels stressed and needs

to recover from it. Recovery can be realized, for example, by engaging in leisure activities that positively contribute to the employee's self-esteem. If the resources cannot be restored sufficiently, resulting in prolonged stress and an increasing lack of recovery, this may ultimately harm health and well-being.

Thus both the effort-recovery model and the conservation of resources theory emphasize the importance of recovery for health and well-being and they complement each other. According to the former theory it is important to withdraw from the demands of work and to avoid exposure to similar demands, so that resources required at work are not depleted after work either. According to the latter theory, restoring threatened resources or gaining new internal resources will help to recover (Siltaloppi, Kinnunen, & Feldt, 2009).

### **The concept of recovery and its importance**

Recovery can be defined as the process during which an individual replenishes and repairs the energy resources depleted during work, thereby reconstructing the pre-stressor homeostasis of physiological and psychological systems (Sonnetag & Fritz, 2007). Thus, recovery represents a process opposite to the strain reactions occurring during stressful work (Geurts & Sonnetag, 2006; Sonnetag & Geurts, 2009). Due to the fact that time is a crucial variable in the recovery process (Meijman & Mulder, 1998), it seems obvious that longer periods of respites are accompanied by better and more efficient recovery. However, the measurement of recovery indicators such as fatigue, sleep quality, and health complaints illustrate that vacation effects fade within the first few weeks after resuming work (de Bloom et al., 2009, 2011). Research findings emphasize the importance of daily recovery processes after each work day (Demerouti, Bakker, Geurts, & Taris, 2009). During leisure time an individual engages in different activities (e.g. social activities sleep) that might reduce fatigue while improving mood and recharging one's battery (Sonnetag & Fritz, 2007). In case of inadequate recovery and a consistent exposure to job stressors, chronic fatigue can occur (Querstret & Cropley, 2012).

The need for recovery is a conscious emotional state which can be characterized as an inherent need that provides for the rebuilding of personal resources (Sonnetag & Zijlstra, 2006). Study findings reveal that the need for recovery is negatively related to individual well-being (Sonnetag & Zijlstra, 2006). Furthermore, after stressful working days, when workload and cognitive demands are high, the organism needs more time to unwind and to down-regulate the aroused psycho-physiological system. This is shown for example in having difficulties to relax during off-work time or to concentrate on non-work related tasks (Sluiter, Frings-Dresen, Meijman, & Van der Beek, 2000; Sonnetag & Zijlstra, 2006). The need for recovery refers to an early phase of long-term load reactions which can result in prolonged fatigue (Demerouti, et al., 2009). This incomplete recovery spills over to the energy level in the next working day, resulting in heightened levels of need for recovery. If the spillover effects accumulate in the long run, a vicious cycle results which causes chronic fatigue. In turn, other health problems such as high blood pressure will emerge (Sluiter et al., 2000).

*Settings in which recovery may occur*

Recovery can occur during both work and leisure time (Geurts & Sonnentag, 2006). The former is referred to as internal recovery, the latter is referred to as external recovery (Taris, et al., 2006; Van der Hulst & Geurts, 2001). Internal recovery includes, for example, lunch and coffee breaks (Tucker, 2003). External recovery is assumed to occur in various temporal settings, including after-work hours, weekends, and longer periods of respite (e.g., holidays) (Demerouti et al., 2009; Geurts & Sonnentag, 2006). Breaks during work are most effective when taken during periods of experienced fatigue (Tucker, 2003). Within such rest breaks, food, caffeine and naps are identified as fatigue countermeasures (Horn & Reyner, 1996). According to Tucker (2003) the effective timing of these breaks is often difficult to manage, especially for employees with less autonomous work schedules, as they have to adhere to the fixed timing of breaks. Consequently, they may have to take a break even when they are not exhausted or cannot pause when desired and needed. With regard to the optimal duration of intra-shift breaks, there are no consistent recommendations given (e.g., suggestions include having three bigger breaks a day versus having a 15 minute break every two hours). This may be due to a lack of systematic investigations, but may also depend on the work load the employee has to fulfill, such that higher work load requires shorter time intervals between each rest break (Tucker, 2003).

In addition to investigating the beneficial effects of rest breaks during work, research has also focused on the effects of recovery occurring after work (i.e. external recovery) (Demerouti et al., 2009), and has provided support for the notion that off-job time also promotes recovery (e.g., Fritz & Sonnentag, 2005; Sonnentag, 2001; Westman & Etzion, 2001). Vacation studies have demonstrated that vacation from work has a positive effect on health and well-being (de Bloom et al., 2011). Among others, employees' perceived stress, experienced burnout, and rate of absenteeism for non-health reasons such as personal matters, have been found to decline after vacation (Westman & Etzion, 2001). However, vacation is not always beneficial; negative incidents, such as illness or conflicts, can undermine the recovery process (de Bloom et al., 2011). Conversely, absence from work that is not intended to serve as a respite, such as military reserve service, can promote recovery if experienced positively (Etzion, Eden, & Lapidot, 1998). However, as mentioned before, the salutary effects of vacations do not last long (de Bloom et al., 2011; Westman & Etzion, 2001) and daily off-job time or weekends may be more important for the employees' recovery process.

Effective weekend recovery has been found to predict weekly job performance and better well-being on Mondays (Fritz & Sonnentag, 2005). In addition, research has shown that employees perceive the accomplishment of their tasks as less effortful and straining when recovered at the weekend (Binnewies, Sonnentag, & Mojza, 2010). Employees also have been found to experience less disengagement and exhaustion when recovered adequately (Fritz & Sonnentag, 2005). At the day level, those who recover after work have been found to report better well-being before going to sleep (Sonnentag, 2001), and less fatigue and negative affect in the morning

(Sonnentag, Binnewies, & Mojza, 2008). Also, employees that feel physically and mentally refreshed in the morning showed better work performance and work engagement (Binnewies et al., 2010; Demerouti, Bakker, Sonnentag, & Fullagar, 2012; Sonnentag, 2003).

### *Off-job activities*

According to Sonnentag and Geurts (2009), researchers approaching recovery as a process focus on the mechanisms underlying recovery. These mechanisms refer to off-job activities employees engage in after work as well as to attributes associated with these activities. It has been claimed that it is not important what one does to recover but how one feels while doing it (Sonnentag & Fritz, 2007). Thus, individuals engaging in different off-job activities might recover equally, due to similar psychological experiences attached to these activities.

Individuals cannot however spend all their off-job time on activities that promote recovery (Sonnentag, 2001). Besides fulfilling basic needs, such as eating, or sleeping, employees are confronted with activities with an obligatory nature, such as additional work-related and domestic activities. If these additional duties have been carried out, off-job time can be considered as synonymous with leisure time, which individuals can spend on activities, such as watching television, meeting with friends, or doing sports (Geurts & Sonnentag, 2006). Sonnentag (2001) examined the contribution of various off-job activities to recovery. Work-related activities, task-related activities (such as making one's tax declaration), and household and child-care activities were predicted to be negatively related to recovery, assuming that they draw on the same resources depleted during work, or are demanding themselves. On the other hand, leisure time activities with a potential for recovery were hypothesized to be positively related to recovery, since they put no additional demands on the individual's resources needed during work, or they help to gain new resources. Low-effort activities, such as watching a movie, social activities, and physical activities, were considered as such leisure activities with a potential for recovery.

Almost all of Sonnentag's (2001) hypotheses were supported by research, only time spent on household and child-care activities appeared to have not the predicted effects. However, these findings on low-effort and social activities have not always been replicated (Rook & Zijlstra, 2006; Sonnentag & Zijlstra, 2006; Sonnentag, 2001). For example, a study on flight attendants' daily recovery from work, found time spent on social activities to be positively related to depression (Sonnentag & Natter, 2004). The researchers argued that this might be due to the fact that flight attendants are confronted with high emotional demands during work and therefore prefer to withdraw from social activities after work. However, flight attendants may spend time with others (especially with colleagues between shifts) despite their need for social withdrawal, resulting in rather impaired recovery processes. Generally, individuals have been found to show an increased tendency to socially withdraw after stressful working days (Repetti & Wood, 1997).

### *Recovery Experiences*

It has been argued that not specific activities but the psychological experiences attached to off-job activities help employees to recover (Sonnentag & Fritz, 2007). These experiences are labeled recovery experiences and they consist of psychological detachment from work, relaxation, mastery, and control. Psychological detachment and relaxation may help to recover, because they imply that no additional demands are made on resources exhausted during work. The experience of mastery and control should promote recovery by building up new resources, such as self-confidence (Sonnentag & Fritz, 2007).

Studies indicate that the experience of mastery, control, and relaxation plays a significant role in maintaining well-being at work (Siltaloppi et al., 2009; Sonnentag et al., 2008; Sonnentag & Fritz, 2007). Relaxation can result from deliberately practicing relaxation techniques, such as meditation, and from activities of everyday life, such as taking a bath (Pennonen, 2011). It is characterized by decreases in heart rate and muscle tension, thereby contributing to recovery by reducing prolonged activation. Among others, it has been found to be negatively related to emotional exhaustion and sleep problems, and positively related to affect (Sonnentag et al., 2008; Sonnentag & Fritz, 2007). Mastery experiences refer to off-job activities that offer opportunities to acquire new skills, such as learning a foreign language, and sport. These experiences must not overtax an individual's capabilities, so that finally the benefits exceed possible negative consequences. That is, mastery experiences act as external resources by increasing self-efficacy and feelings of competence, thereby promoting recovery (Sonnentag & Fritz, 2007). This applies also to the experience of control during leisure time. Control describes the degree to which an individual is able to choose which activity to engage in after work (Siltaloppi et al., 2009). Just as relaxation, mastery experiences and control experiences have been found to be negatively related to emotional exhaustion and need for recovery (Sonnentag & Fritz, 2007). Moreover, mastery experiences during the evening hours were positively associated with positive affect in the morning (Sonnentag et al., 2008). Control, on the other hand, was associated with higher life satisfaction and less depressive symptoms and health complaints (Sonnentag & Fritz, 2007).

So far, psychological detachment has received most research attention. First introduced by Etzion and colleagues (1998), psychological detachment is defined as an individual's feeling of being away from work. However, psychological detachment implies not only being physically away from the work situation during non-work time, but also to disengage mentally (Sonnentag & Fritz, 2007). Thus, for psychological detachment to occur, one needs to stop job-related tasks and to stop thinking about job-related issues. For example, it is impossible to reach a detached state of mind when ruminating about an argument with the supervisor or when answering work-related emails during off-job time (Sonnentag & Bayer, 2005). Congruently, research indicates that employees who spend much time on work-related activities, frequently use communication technologies, and have low work-home boundaries, detach less from work (Park, Fritz, & Jex, 2011; Sonnentag & Bayer, 2005; Sonnentag, Kuttler, & Fritz, 2010). It is suggested that psychological detachment is one of the

major factors that contributes to recovery from work-related stress (e.g., Etzion et al., 1998; Siltaloppi, et al., 2009). Studies indicate that it is negatively related to need for recovery and emotional exhaustion, and particularly important after high time pressure work days (Sonnentag & Bayer, 2005; Sonnentag & Fritz, 2007). Especially when work demands are high, individuals are less successful to detach (Sonnentag & Krueel, 2006). Thus when needed the most, recovery is impeded, which in turn impairs well-being (Sonnentag, 2012). Poor psychological detachment has been found to result in increased fatigue and less positive mood at bedtime and in the morning prior to work (Sonnentag & Bayer, 2005; Sonnentag et al., 2008).

Research has shown that individuals who expect that they can adequately recover after work, are more likely to psychologically detach during off-job time (Sonnentag & Krueel, 2006). However, this so-called recovery-related self-efficacy does not moderate the relationship between work demands and psychological detachment. Other individual-difference variables found to have an impact on psychological detachment are job involvement and negative affectivity (Sonnentag, 2012). Both individuals highly involved in their jobs (i.e. people who show high identification with their job), and individuals who tend to experience negative emotions more frequently have been found to psychologically detach less from work (Kühnel, Sonnentag, & Westman, 2009; Sonnentag & Fritz, 2007; Sonnentag & Krueel, 2006). It is argued that these individuals have difficulty to stop thinking about past and subsequent workdays (Sonnentag, 2012). It is suggested that psychological detachment is particularly important for those individuals (Sonnentag, Mojza, Binnewies, & Scholl, 2008). Also, employees who are consciously more willing to separate their workplace from their homes are better able to detach psychologically during off-job time (Park, Fritz, & Jex, 2011). Thinking about work during leisure time does however not only have detrimental effects. Positive reflection about work has also been found to benefit work performance (Binnewies, Sonnentag, & Mojza, 2009; Querstret & Cropley, 2012).

### *Recovery as an outcome*

Recovery can also be approached as an outcome, that is, as a state of being recovered (Pennonen, 2011; Sonnentag & Geurts, 2009). Whereas feeling recovered and high sleep quality are positive indicators of recovery, need for recovery and fatigue indicate insufficient recovery (Binnewies et al., 2009; Querstret & Cropley, 2012; Siltaloppi et al., 2009). In addition, psychological outcomes considered to result from long-term incomplete recovery, such as job burnout, and behavior outcomes, such as work performance, can be used to assess recovery (Binnewies et al., 2010; Demerouti et al., 2012; Sonnentag & Geurts, 2009; Sonnentag, 2003). These outcome variables are interrelated. During work, fatigue builds up resulting in an urgent need to take a break to recover (Demerouti et al., 2009). If this need is not met after work, this may impair sleep quality (Sonnentag & Geurts, 2009), which in turn predicts fatigue (Åkerstedt et al., 2004; Querstret & Cropley, 2012). Fatigue, on the other hand, impedes work performance and may ultimately, if chronic, lead to long-term strain reaction, such as burnout (Querstret & Cropley, 2012).



## CONCLUSION

The goal of this paper was to provide a structured review of recovery from work-related stress during leisure time. Firstly, theories that help to understand recovery were summarized. Secondly, results from research on different recovery settings were reported. It became evident that intra-shift breaks, daily recovery after work and recovery at weekends are important to maintain health and well-being, especially since the salutary effects of longer respite periods have been found to fade out quickly. However, most findings derived from diary studies that have been conducted over short periods of time only. In order to better evaluate the effects of different periods of recovery time, future research should examine the effects of recovery over an extended period of time (Binnewies et al., 2010). Similarly, more studies approaching recovery as a process are needed to establish a better understanding of underlying factors.

Whereas work-related and task-related activities can be considered to impede the recovery process, physical activities have been found to be beneficial. In contrast, findings on low-effort and social activities are less clear; further research is needed to examine their contribution to recovery. It cannot be assumed that employees benefit from any off-job activity that is enjoyable and not related to work. For example, time spent watching a football game in a bar cannot be equivalent to time spent in the nature; being in busy environments requires voluntary attention whereas being in the nature demands effortless attention and helps with stress recovery (Aspinall, Mavros, Coyne, & Roe, 2013). In addition to this, more green spaces have been found to lessen brain fatigue and to be related to lower stress levels as indicated by decreased salivary cortisol levels (Thompson, Roe, Aspinall, Mitchell, & Miller, 2012). Even sounds from nature are enough to facilitate recovery (Alvarsson, Wiens, & Nilsson, 2010). Future studies should aim to extend these findings by addressing potential beneficial effects of providing green spaces or nature sounds at work on employee recovery.

Findings from research on off-job activities can be considered to be highly valuable as they can be used by both the individual and the organization to promote recovery. For example, organizations could facilitate sport activities in order to stimulate employees to engage in activities that foster recovery. Findings from research on recovery experiences are equally promising. Psychological detachment seems to be one of major factors that contribute to recovery from work-related stress. Consequently, future research should examine techniques that help enhance psychological detachment. For example, mindfulness, a psychological quality that has its roots in Buddhist meditation, has repeatedly been found to decrease rumination and might therefore have beneficial effects on detachment (e.g., Labelle, Campbell, & Carlson, 2010).

In addition to future studies focusing on facilitating effects, more research on factors impeding recovery experiences such as psychological detachment is needed.

For example, the impact of low work-home boundaries on recovery is especially interesting, as more and more employees work from their homes (Sonnentag, 2012). How these employees can detach from work is only one of the questions that remain to be answered. Another area of interest that should be further pursued is the influence of personality on recovery processes and work behavior. For example, employees with high work engagement tend to be stronger involved in work related demands resulting in a reduced ability to psychologically detach.

Taken together, based on the reviewed literature it can be concluded that daily recovery, promoted by off-job activities and recovery experiences, is indispensable in order to maintain employee health, well-being and job performance.

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