

# Health Improvement and Recovery Experiences During Vacation of School Teachers: The Benefit of Physical Activity

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**Abstract** The current study tested whether physical activity during a school teachers' vacation is associated with health improvement. A second research question addressed whether recovery experiences (detachment, mastery, relaxation, and control) mediate between physical activity and health improvement. Forty-eight elementary school teachers filled out a questionnaire before and after vacation. Self-reported health status was assessed prior to vacation and during vacation and recovery experiences were assessed during vacation. Mean levels of self-reported general health increased during vacation. Health improvement was restricted to those teachers who were physically active during their vacation ( $p = .013$ ). Analysis of covariance showed activity related group differences in recovery experiences during vacation. Those who did sports during their vacation reported significantly higher levels of detachment and mastery. The percentage of days with sports during vacation was positively related to experience of mastery and detachment during vacation. The mediation hypothesis was however not empirically supported. Physical activity during vacation corresponded with elementary teachers' recovery and health improvement during vacation.

**Keywords** Physical activity · Recovery · Detachment · Mastery

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**Practitioner Points** Findings show that physical activity during vacation promotes health during vacation. Physical activity is also linked to increased recovery experiences.

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## Introduction

During vacation, most employees recover from work demands (Strauss-Blasche et al. 2000). In their meta-analysis, de Bloom et al. (2009) reported a small to medium positive effect ( $d = .43$  to  $d = .53$ ) on health and wellbeing during and right after vacation. Furthermore, over a 9-year timeframe it was found that not having taken annual vacation was positively related to higher morbidity and mortality (Gump and Matthews 2000). Meanwhile, few studies focus on processes that underlie the relation between recovery during holidays and health outcomes (de Bloom et al. 2010). Recently, Sonnentag et al. (2017) reviewed research on recovery and occupational health. The author(s) state that much research so far addressed recovery during free evenings and weekends. Among recovery experiences, a first meta-analysis on detachment during free evenings and weekends was recently published (Wendsche and Lohmann-Haislah 2017). However, studies should also address recovery activities and recovery experiences during rather short time frames like work breaks and long time frames like vacations and sabbaticals (Sonnentag et al. 2017). The current study adds to the literature in analysing the frequency of exercise-related recovery activities during vacation and their association with recovery experiences during vacation and health improvement.

## Recovery Experiences During Vacation

Geurts and Sonnentag (2006) suggest two basic mechanisms through which vacations facilitate recovery: a passive and an active one. In accordance with the effort-recovery model (meijman and Mulder 1998; Sluiter, Frings-Dresen, van der Beek, and Meijman 2001; Sluiter, De Croon, Meijman, and Frings-Dresen 2003), the passive mechanism is direct relief from demands at work, and the recovery process starts as soon as no further demands are put upon the organism. The temporary alleviation of work-related duties during vacation lasts longer than it does on evenings or weekends, and thereby facilitates recovery. The engagement in valued activities including sports is viewed as the active mechanism through which vacations foster recovery (de Bloom et al. 2009). This is in line with Hobfoll's (2001) conservation of resources theory, that predicts strain to be a consequence of lacking resources, the threat of resource loss, or absence of resource gain after the investment of resources (Hobfoll 2001). Resources comprise the quality of work (e.g., valued work role), personal resources (e.g., self-esteem, mastery), property (e.g., home, money), and energies (e.g., mental vigor, health, endurance) which the individual tries to obtain, maintain, and defend. Conservation of resources theory suggests that engaging in pleasant activities of one's choice can help rebuild resources including mental vigor and thus prepare the individual for future challenges. Sports activities during vacation seem especially effective to foster a sense of relaxation and its associated beneficial health effects (de Bloom et al. 2009). The current study therefore evaluates the relationship between sports activities during vacation and beneficial health outcomes.

## Recovery by Sports During Vacation

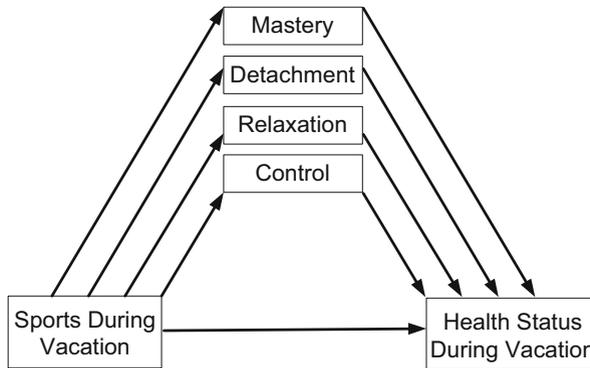
A direct positive effect of sport activities can be expected because physical activity shows a therapeutic benefit in treatment of disease ("physical exercise is medicine", cf.

Pedersen and Saltin 2015, p.2). A growing body of evidence indicates a positive influence of physical exercise on health complaints, including a positive effect on 26 chronic diseases (Pedersen and Saltin 2015) and mental health (Penedo and Dahn 2005). Recently, 15 Randomized Control Trials (RCTs) that implemented exercise as intervention at work showed positive effects on diverse indicators of health, well-being, and productivity (Sjøgaard et al., Sjøgaard et al. 2016). Thereby, exercise was individually tailored to each study participant (“intelligent physical exercise training”) in considering physical fitness and work demands (Sjøgaard et al. 2016). Another recent RCT showed a low-intensity running intervention was shown to reduce mental fatigue and the benefit was better when participation in running across six weeks was frequent (de Vries et al. 2017). Moreover, an indirect positive effect of sports activities can be expected via increased unwinding and recovery experiences (de Bloom et al. 2009). Sonnentag and Fritz (2007) propose mastery, psychological detachment from work, relaxation, and control as important psychological processes leading to recovery. These processes are termed recovery experiences. Sports may elicit mastery experience when activities act as an individual challenge or offer the opportunity to learn new skills, such as learning a new sport. In addition, sports activities are likely to induce a flow experience that induces an experience of mastery – a major pathway Newman, Tay and Diener (2014) derived from a literature summary and with reference to various psychological concepts that are involved in leisure activities that increase well-being. Sports activities should promote subjective leisure well-being via mediating factors of the DRAMMA model (detachment-recovery, autonomy, mastery, meaning, and affiliation, Newman et al. 2014). Moreover, good sports performance, active coping with a challenge and improvement of skills may enhance self-efficacy as a personal resource (Bandura 1997).

Doing sports can reduce levels of the body’s stress hormones (such as adrenaline and cortisol) and stimulate the production of endorphins that promote feelings of relaxation after participating in sports (Otto and Smits 2011). Relaxation is characterized by low activation and positive affect (Sonnentag and Fritz 2007). de Bloom et al. (2013) reported relaxation during vacation to be significantly related to health/well-being during as well as after vacation. Many sports activities need attention and cognitive resources are spent to sports activity. Thus, individuals cannot stick mentally to work issues and therefore detach from work. Hence, sports activities during vacation have the potential to increase one’s sense of detachment from work (Sonnentag 2012; Sonnentag and Bayer 2005).

The only study investigating all four recovery experiences during vacation found psychological detachment and relaxation to be significantly correlated to changes in health and well-being, while mastery and control were not (de Bloom et al. 2012). With respect to sports activities during vacation, however, mastery and control may play a more important role. Control enables self-initiation of sports activities during vacation. The current study will therefore test psychological mastery, detachment, relaxation, and control as consequences of more frequent sports activity during vacation and as predictors of health after vacation.

Summing up, only few studies that have been done thus far on sports activities and recovery experiences during vacation and their link to health and well-being. In the current study, the hypothesis is that recovery experiences will mediate the association between sports activities during vacation and positive health change during vacation (Figure 1). Mediations are hypothesized to be partial. Complete mediations seem



**Fig. 1** Hypothesized indirect effects of sports during vacation on health status during vacation through recovery experiences

unlikely given the evidence for positive direct effects of exercise on health (Sjøgaard et al. 2016).

## Method

### Participants and Design

In our study, 121 Swiss teachers participated. They were employed at six different schools (one primary school, one college and four vocational schools) in four different cantons of Switzerland. The participation rate was 59.3% (from 204 requested people). The participating teachers completed a first questionnaire during the last week before their school holidays. Seventeen participants, who filled out the first questionnaire, had to be excluded because of too many missing values. Of the remaining 104 participants, 48 (28 men, 20 women) filled out a second questionnaire during the first week of school after the respective school holidays (47% follow-up). Mean tenure was 15 years ( $SD = 10.5$  years). School holidays ranged from one to five weeks whereas almost 50% of the teachers reported 14 days of vacation. For the two questionnaires, the participants received an email with the corresponding web link one week prior to the completion date, which led them to the online questionnaires of the software Unipark Survey.

The questionnaire included scales assessing demographics, recovery experiences, health, and additional information concerning the vacation. As the study was conducted in the German-speaking part of Switzerland, all questions were devised in German. Study participants were provided with information about their rights and guarantee of anonymity.

### Data Assessment

In the first part of the questionnaire, participants were asked for their demographics and to think of the last 30 days prior to their vacation and the state of their health during this period. Questions in the second part (concerning recovery experiences and health) referred to the time during their vacation.

A single item assessed *sports and exercise during vacation*: “Did you participate in sport or carry out any sporting activities/exercise during your most recent vacation (e.g. cycling, swimming, hiking)?” The response format was binary (0 = no, 1 = yes). A second item asked for how many days participants engaged in sports during vacation. The number of days was related to the length of vacation to generate the percentage of vacation days with sports as indicator of frequency of sports during vacation.

*General health* was assessed with the item “How is your health in general?” (Simon et al. 2005). The question ‘How is your health in general?’ is a widely used simple measure, as it has been proven to be a powerful predictor for mortality; poor self-assessed health increases the mortality risk, even when other (more objective) indicators of health status have been controlled (Idler and Benyamini 1997). In this study the question was framed in the context of the last four weeks prior to vacation: “How would you rate your general health in last 4 weeks?” with 5 response options (1 very poor – 5 very good). The question about health during vacation was posed at follow-up: “How would you rate your general health during vacation?” with 5 response options (1 very poor – 5 very good).

In order to assess *mastery, detachment, relaxation, and control* the four subscales from the German version of the *recovery experiences questionnaire* (REQ) by Sonnentag and Fritz (2007) were used. The items were slightly adapted so that they concerned vacation rather than the evening after a workday. In an earlier study, de Bloom et al. (2011) had investigated the factor structure of a similar adaptation of the REQ to a vacation format and found the same four factors as for the original REQ (e.g. “During the holidays... I am able to distance myself from work,” “...I take time to relax” or “...I determine the course of the day myself”). The four subscales used in the present research consist of four items each and uses a 5-point scale ranging from *I do not agree at all* (1) to *I fully agree* (5). Cronbach’s alphas of the four subscales were satisfying, ranging from .71 to .93.

## Potential Control Variables

*Duration of vacation (days)* was assessed as potential control variable because duration of vacation is known to positively predict well-being during vacation (Strauss-Blasche et al. 2002). After the end of vacation, well-being is known to return to pre-vacation values within 1–4 weeks (de Bloom et al. 2009) so that the delay in follow-up response may bias results. Therefore, *days between end of vacation and self-report after vacation* was assessed as another potential control variable. Demographical information on sex and age was also considered as potential control variables.

## Analyses

In all analyses, duration of vacation (days) was included as a control variable, because among potential control variables it was the only variable that was significantly related to predictors or outcomes (Carlson and Wu 2012). Two-tailed tests were used and the alpha level was set to  $p < .05$ , marking the significance criterion. ANCOVA were performed to test whether sports activities were correlated with more extended health improvement during vacation and more recovery experiences during vacation. The mediation hypothesis was tested using Preacher and Hayes’ (2008) bootstrap test for

estimation of indirect effects (INDIRECT macro for SPSS). Both hypothesized mediators were entered simultaneously. The number of bootstrapped resamples was 5000. All analyses were conducted using SPSS 22.0.

## Results

Zero-order correlations among all study variables, means and standard deviations are shown in Table 1. Participating in sports during vacation was positively correlated with health during vacation ( $r = .47, p < .001$ ), health improvement ( $r = .36, p < .05$ ), recovery experiences of mastery ( $r = .41, p < .05$ ), and detachment ( $r = .36, p < .05$ ), while it was not significantly correlated with relaxation ( $r = .05, p = .731$ ) and control ( $r = .12, p = .417$ ). Frequency of sports during vacation was also associated with health during vacation ( $r = .31, p < .05$ ) and showed a tendency toward association with health improvement ( $r = .26, p = .076$ ). Frequency of sports was correlated with recovery experiences of mastery ( $r = .30, p < .05$ ), and detachment ( $r = .30, p < .05$ ), while it was not positively correlated with relaxation ( $r = -.06, p = .731$ ), and showed a tendency toward association with control ( $r = .26, p = .072$ ). Associations between recovery experiences and health prior to vacation, health during vacation, and health improvement were not significant.

There was only one significant correlation of the control variables with the measures of health status and recovery experiences. Duration of vacation was linked to control ( $r = .33, p < .05$ ).

Health status was better during vacation ( $M = 4.33, SD = 0.81$ ) than prior to vacation ( $M = 3.79, SD = 0.80$ ). Table 2 shows a significant main effect in the ANCOVA that indicates positive health change was restricted to those who did sports during vacation ( $F [1,45] = 6.73, p = .012$ , Figure 2). Frequency of sports with 3 levels (no sports, sports on 50% of vacation days or less, sports on more than 50% of vacation days) showed a significant effect that was due to differences between those who did not participate in sports ( $F [1,45] = 3.44, p = .041$ , Figure 2). Health improvement did not differ between those 25 teachers who did sports on 50% of vacation days or less and those 13 teachers who did sports on more than 50% of vacation days. Moreover, as indicated from Table 3 and shown in Fig. 3, those who did sports during vacation reported significantly better recovery experiences of mastery ( $F(1,45) = 9.99, p = .003$ ) and detachment ( $F(1,45) = 7.41, p = .009$ ), while there was no difference in levels of relaxation ( $F(1,45) = 0.24, p = .624$ ) and control ( $F(1,45) = 1.34, p = .253$ ).

### Recovery Experiences as Mediators of Sports During Vacation and Health During Vacation Association

Despite the lack of zero-order association between recovery experiences and health during vacation, the mediation analyses were conducted to allow potential suppressor influences of control variables on postulated mediation. Figure 4 shows unstandardized regression coefficients for the hypothesized mediations. In accordance with zero-order correlations, recovery experiences and health during vacation were not significantly correlated in mediation analysis and all indirect mediation paths were not significant. Doing sports during vacation was associated with mastery and detachment. A very

**Table 1** Descriptive statistics and zero-order correlations between study variables

	<i>M</i>	<i>SD</i>	<i>Cronbach Alpha</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Sex <sup>a</sup>	—	—	n.a.	—												
2. Age	47.54	11.50	n.a.	-.28	—											
3. Duration of vacation [days]	16.25	8.43	n.a.	.04	-.04	—										
4. Days between end of vacation and post- vacation self-report [days]	4.21	4.19	n.a.	.12	.03	.34*	—									
5. Health Status Pre-vacation	3.79	0.80	n.a.	-.21	.16	.07	-.20	—								
6. Health Status during vacation	4.33	0.81	n.a.	-.14	.03	.01	-.25	.54***	—							
7. Health improvement	0.54	0.77	n.a.	.07	-.13	-.06	-.06	-.47**	.49***	—						
8. Sports during vacation [No, Yes]	0.79	0.41	n.a.	-.19	-.13	-.12	-.26	.13	.47***	.36*	—					
9. Number vacation days doing sports	5.10	3.97	n.a.	-.22	-.14	.07	-.24	.10	.33*	.25	.67***	—				
10. Percent vacation days doing sports	37.71	30.40	n.a.	-.13	.16	-.41**	-.25	.07	.31*	.26	.64***	.74***	—			
11. Mastery	3.17	0.69	0.71	-.17	.03	.09	.04	.24	.27	.03	.41**	.30*	.13	—		
12. Detachment	3.55	0.78	0.91	-.13	.03	.08	-.17	.08	.25	.18	.36*	.30*	.27	.28	—	
13. Relaxation	3.86	0.60	0.86	.11	.20	.17	.06	.01	-.01	-.02	.05	-.06	-.02	.20	.48***	—
14. Control	4.03	0.65	0.93	.05	-.03	.33*	.17	.03	.11	.09	.12	.26	.12	.13	.52***	.62***

Note. N = 48. <sup>a</sup> 1 = men (n = 28, 58%), 2 = women (n = 20, 42%). \* p < .05. \*\* p < .01. \*\*\* p < .001

**Table 2** Recovery experiences in teachers who did sports during vacation or did no sports during vacation (ANCOVA)

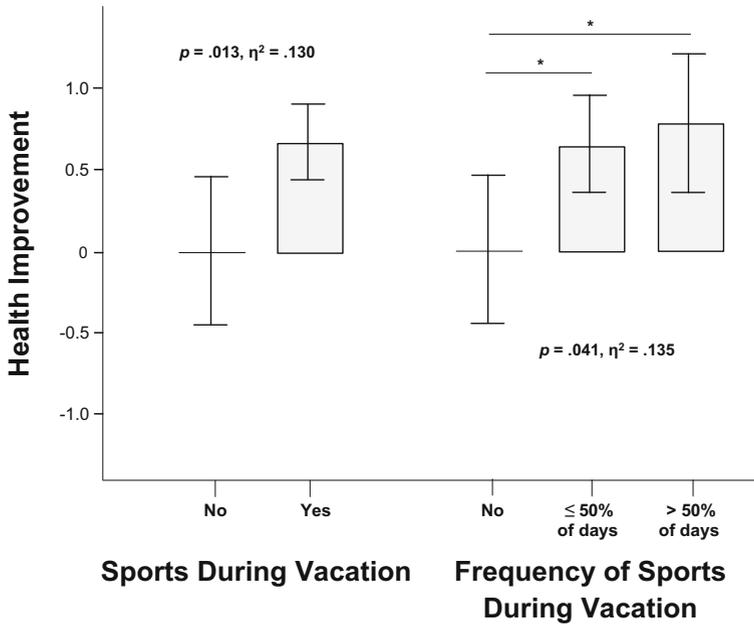
	Sum of Squares	df	Mean Sum of Squares	F	<i>p</i>	Partial Eta-Square
<i>Health Improvement</i>						
Sports during vacation [Yes ( <i>n</i> = 38), No ( <i>n</i> = 10)]	3.620	1	3.620	6.730	.013	.130
Error	24.205	45	0.538			
<i>Health Improvement</i>						
Frequency of sports during vacation [No sports ( <i>n</i> = 10), ≤ 50% of days ( <i>n</i> = 25), > 50% of days ( <i>n</i> = 13)]	3.761	2	1.881	3.438	.041	.135
Error	24.064	44	0.547			
<i>Mastery</i>						
Sports during vacation [Yes, No]	4.037	1	4.037	9.996	.003	.182
Error	18.039	45	0.430			
<i>Detachment</i>						
Sports during vacation [Yes, No]	4.048	1	4.048	7.410	.009	.141
Error	24.583	45	0.546			
<i>Relaxation</i>						
Sports during vacation [Yes, No]	0.089	1	0.089	0.244	.624	.005
Error	16.510	45	0.367			
<i>Control</i>						
Sports during vacation [Yes, No]	0.517	1	0.517	1.343	.253	.029
Error	17.239	45	0.385			

Note. *N* = 48. Results were controlled for duration of vacation [days]. Levene's test of equality of error variances between the sports and non-sports group was non-significant in health improvement ( $F(1,46) = 1.87$ ,  $p = .178$ ), detachment ( $F(1,46) = 0.96$ ,  $p = .758$ ), mastery ( $F(1,46) = 1.08$ ,  $p = .304$ ), relaxation ( $F(1,46) = 0.50$ ,  $p = .482$ ), and control ( $F(1,46) = 2.99$ ,  $p = .090$ ). Levene's test of equality of error variances between frequency of sports groups [No sports, ≤ 50% of days, > 50% of days] group was non-significant ( $F(1,45) = 1.48$ ,  $p = .240$ )

similar pattern of results emerged when mediation was tested with sports frequency as predictor of health improvement (Figure 5). Sports frequency was positively associated with detachment and control. Indirect paths were not confirmed.

## Discussion

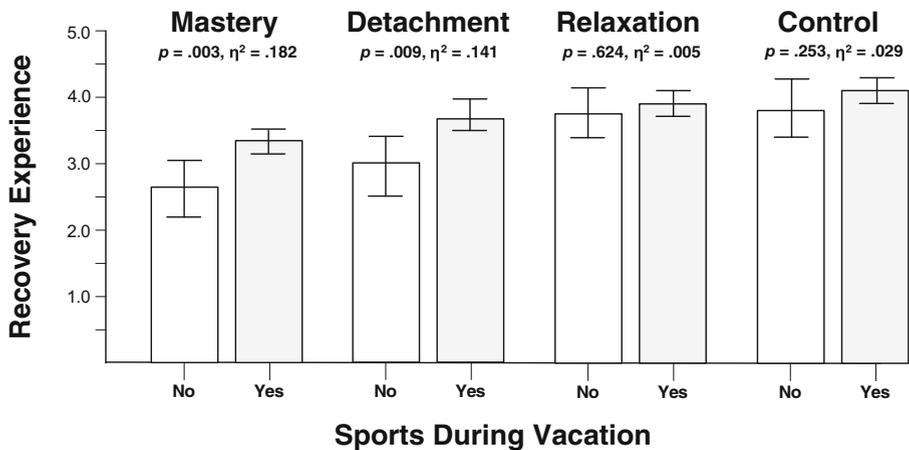
The present research aimed to shed light on the relationship between health prior to vacation, recovery experiences during vacation, and health during vacation. Doing sports during vacation was related to better health and increased health during vacation and more frequent experiences of mastery and detachment during vacation. In addition, the frequency of sports during vacation was positively linked to detachment and the recovery experience of control. Duration of vacation was linked to control but was not associated with health improvement. Findings are in line with reviews showing



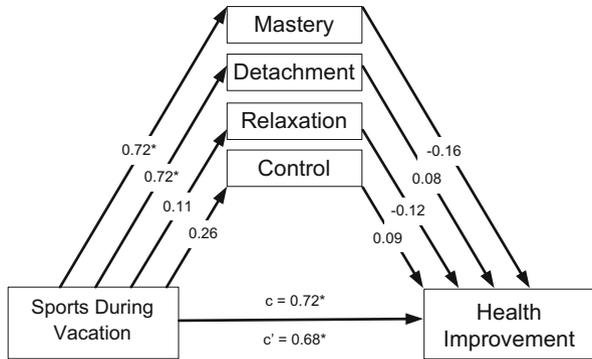
**Fig. 2** Mean change in self-reported health improvement (health during-vacation level minus health pre-vacation level) in teachers who did sports during their vacation ( $n = 38$ ) and teachers who did no sports during their vacation ( $n = 10$ ). Mean values (and CI95%) are estimated marginal means from ANCOVA with duration of vacation as covariate

recovery on a regular basis seems vital to protect employees’ health (Semmer and Kottwitz 2011), and frequent respites are supposed to be more beneficial than the duration of a single vacation (de Bloom et al. 2013).

In contrast to expectations, experiences of mastery, detachment, relaxation, and control during vacation did not partially mediate the link between doing sports during

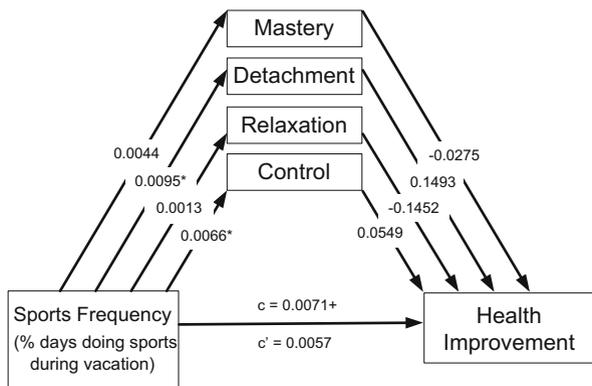


**Fig. 3** Recovery experiences in teachers who did no sports during vacation ( $n = 10$ ) and teachers who did sports during vacation ( $n = 38$ ). Mean values (and CI95%) are estimated marginal means from ANCOVA with duration of vacation as covariate



**Fig. 4** Indirect effect of doing sports during vacation (yes,no) on health improvement through recovery experiences. Length of vacation (days) was controlled for mediators and health improvement. Unstandardized regression coefficients. \* $p < .05$ , \*\*  $p < .01$ , \*\*\* $p < .001$ , two-tailed

vacation and self-reported health during vacation. The link between recovery experiences and health status during vacation was found to be absent (relaxation, control) or weak (mastery, detachment). One has to admit that the sample size of the current study may have limited the power to confirm an existing weak partial mediation. Replication with a larger sample may confirm mastery and detachment as mediators. Drop-out analysis showed that respondents were significantly older than non-respondents. Looking at mean values and standard deviations of relaxation and control shows that mean values tend to be higher than mean values of mastery and detachment. Standard deviations in relaxation and control tend to be smaller than those of mastery and detachment. Hence, relaxation and control might show some restriction in variance that limited the extent of covariation with health status. At the same time the lack of correlation does preclude retrospection bias at follow-up. Retrospection bias would have inflated the correlation.



**Fig. 5** Indirect effect of the number of days doing sports during vacation on health improvement through recovery experiences. Mediators and health improvement were controlled for length of vacation. Unstandardized regression coefficients. +  $p < .10$  \* $p < .05$ , \*\*  $p < .01$ , \*\*\* $p < .001$ , two-tailed

Another point is that sports activities should be differentiated in their capability to induce recovery experiences. Teachers perform mentally demanding work tasks and recovery is presumably best when sport activities did not put further strain on those cognitive functions that were strained at work (e.g., by playing chess) and drain those resources that were already depleted at work. Instead, in order to recover, it is best to perform a very different activity, one that would refresh those same resources (Semmer et al. 2010). Thus, sports with motor activity and coordinative challenge (e.g., playing golf or tennis) can be supposed to be beneficial for enabling detachment from work because attention is necessarily bound to the sport task at hand and cannot fluctuate to focus on work-related issues (Sonnentag and Jelden 2009).

A second issue worth consideration in future studies is motives to perform sports during vacation. A recent study by Naegel et al. (2015) showed that the initiation of exercise partly depended on strong individual motives for doing sports (social recognition, appearance, strength and endurance). After a highly stressful time prior to the start of vacation, one might feel too exhausted to pursue sports activities during vacation and be more likely to engage in passive activities, which often do not add to recovery (Sonnentag and Zijlstra 2006). The current finding on frequency of sports and recovery experiences supports this view. Strong individual motives for doing sports may help to overcome such obstacles.

Doing sports was associated with better detachment but not with better relaxation. Participating in sports during vacation is likely to contribute to mental detachment, defined as “the individual’s sense of being away from the work situation” (Etzion et al. 1998, p. 579). A recent review on detachment reported studies that confirmed that detachment increases recovery during vacation, and other studies that failed to do so (Sonnentag and Fritz 2015). Participating in sports during vacation might be a moderator involved, thereby indicating that the link between detachment and recovery is stronger in those who are active during vacation. However, post-hoc regression analysis of health improvement on the interaction between participating in sports and detachment showed no significant regression coefficient. Relaxation is characterized by low activation and positive affect that can be expected after exercise or sports. However, sports are not closely connected with relaxation because relaxation can be also achieved through relaxation techniques or activities that do not put many physical demands on the individual, such as reading, taking a walk or listening to calm music (Sonnentag and Fritz 2007). Detachment and relaxation were tested simultaneously in mediation tests of the current study because psychological detachment and relaxation were originally defined as two independent experiences that uniquely add to recovery (Fritz and Sonnentag 2006; Sonnentag and Fritz 2007). However, Kinnunen et al. (2011) suggested that detachment might be a prerequisite to relaxation; that is, employees might have to detach from work *before* being able to relax. A separate mediation test of detachment and relaxation in the current data did not however change the findings. Future studies testing detachment as a precursor to relaxation should be longitudinal and based on daily experiences. Beside mediation one might consider recovery experiences as moderators of the association between sports and health improvement. Recovery experiences could function as enhancer of the association between sports and health improvement, e.g., by increasing the motivation to exercise. Noteworthy, post-hoc analyses in the current data did not show significant moderator effects of recovery experiences.

## Strengths and Limitations

One of the strengths of the current research is repeated measurement of health status. A limitation is the sole reliance on self-reports and the lack of control over other potentially influencing factors. These include the type of vacation activities, negative incidents during vacation, health behaviour during vacation, or personality factors. Prior to vacation, groups did not differ in health status ( $t(46) = -0.85, p = .399$ ). Moreover, groups also did not differ with respect to demographics that were assessed. Meanwhile, we can not exclude pre-existing group differences in sports participation or other (third) variables to be involved. Future studies should also control for acute conditions that could have emerged over the study periods, influencing responses. There is need for replication by experimental research. The type of sports, and many other characteristics are potential contingencies that could not be addressed in the current study but should be addressed in a replication.

The sole use of self-reports may inflate correlations, as response biases (such as acquiescence) influence the assessment of job stressors, recovery experiences, and health alike (Semmer et al. 2004). Thus, the application of different assessment methods would be favourable to prevent common method variance and achieve better triangulation (de Bloom et al. 2013; Semmer et al. 2004).

Although recovery experiences constitute highly subjective constructs that rely on personal perception, they could be estimated by judgments of participants' friends and partners (Sonnentag and Krueger 2006; Sonnentag et al. 2010). A post-hoc calculation of power for the group difference found in health improvement showed a large effect size of  $d = .91$  and power of 0.81. Nevertheless, the small sample might have limited the chance to confirm small effects and replication in a larger sample seems necessary. Drop-out might have biased results. A drop-out analysis showed the longitudinal sample to be older and to have poorer health status than those teachers who did not respond at follow-up. Poorer health status at baseline was positively related to age. Control of age resulted in no significant difference in baseline health status between follow-up respondents and non-respondents.

## Practical Implications

For teachers, participation in sports during vacation is associated with improved health during vacation and a higher frequency of recovery experiences of mastery and detachment. Future studies should address barriers of sports activities during vacation and individual sport motives that help individuals exercise during vacation. Existing training programs could be adapted to vacations. Hahn et al. (2011) developed a training program specifically targeting recovery experiences. The training consists of two sessions with a total duration of nine hours and teaches various strategies on arranging one's leisure time and managing boundaries between work and leisure. It yields positive effects on recovery experiences. Organizational arrangements targeting job stressors appear to be necessary to complement individual interventions aimed at promoting recovery experiences (de Bloom, Geurts, & Kompier 2010a; Geurts 2014; Sonnentag and Fritz 2014).

## Conclusion

While the negative effects of not taking any vacations have been documented (Gump and Matthews 2000), evidence on sports activity to promote recovery during vacations is growing. Research of possible mechanisms leading to recovery during vacation has only just begun. The current findings suggest that sports during vacation promote teachers' health and recovery experiences during vacation. Vacations in the teaching profession are important to complement daily and weekly recovery.

## Compliance with Ethical Standards

**Conflict of Interest** Author(s) have no conflict of interest.

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