**Online Supplemental Files**

**Definitions of Physical Activity and Physical Exercise**

The literature differentiates between physical activity and physical exercise. Physical exercise is a subcategory of physical activity, and refers to “bodily activity that is planned, structured, and repetitive and has a final or an intermediate objective of improving or maintaining physical fitness” (Caspersen et al. 1985, p. 126). The term physical activity is inclusive of a variety of energy expending bodily movements, and energy expenditure by the body is the core feature that is assumed to cause health benefits (Powell et al., 2011). In our article, we use the term physical activity, unless a concept (i.e., exercise motivation) or research study specifically relates to intended goal-oriented physical activity.

**Additional Information on Sample**

We examined if there were significant differences in demographics, model variables, exercise habits, and health indicators between participants from the four organizations. Employees from the outdoor retailer were more often female, engaged in more physical activity, and reported higher levels of afternoon personal resources as compared to employees from the other three organizations. However, the ICC’s for the endogenous model variables in a three-level model were all < .10 and a model including organization (1 = outdoor retailer, 0 = other) did not affect the relationships under study. Results of the additional analyses are available from the first author upon request.

It was possible for co-workers to also participate as a focal employee. Our data includes 17 dyads in which either the employee, co-worker, or both, participated in both roles. Although ICC of our outcome variables were all < .10, indicating weak dyad effects, we estimated a three-level model controlling for dyad level. All reported significant relationships from the two-level models are also significant in this three-level model.

**Study Design**

The study started with an online general questionnaire in which we assessed demographics, as well as intrinsic and externally regulated motivation for exercise. After completing the general questionnaire, respondents started the daily logs sent to them on their smartphone via the Reallife Experience App. On Monday morning (notification sent at 6:00am), they reported their personal resource levels (e.g., self-efficacy) before work. At 1:00pm, participants were sent the exercise log, answering whether they worked out that day before the end of the workday, as well as the type and duration of the workout. Participants were instructed to delay filling out the exercise log in case their exercise episode would happen between 1:00-4:00pm later in the day. At 3:00pm, participants were sent a log to report their personal resources levels again. Finally, at 5:00pm, a final log was sent to evaluate work outcomes (i.e., concentration, task withdrawal) for that workday; coworkers received this log as well to rate the focal employee’s work outcomes, and both groups were instructed to fill in the log when they finished work.

The Reallife Experience app presents logs to participants in the order they need to be filled out. Thus, if a participant worked out between 1pm and 4pm and (intentionally) missed the exercise log at 1pm but opened the app after 3pm, s/he would first have to complete the exercise log before completing the 3pm log. There were four cases in which the exercise bout occurred between 3pm and 4pm. We verified that in all four cases, the participant filled out the 3pm survey after the exercise bout.

During the daily portion of the study, participants were asked to continuously wear the Fitbit starting on Sunday night and ending on Friday after they completed the end of the day survey. The Fitbit recorded heartrate and the number of active minutes participants engaged in. The Fitbit automatically tracked physical activity bouts of 15 minutes and longer and recorded properties of each physical activity bout (i.e., duration, calories burnt, average heartrate).

**Additional Information on Measures**

**Measuring motivation for exercise.** Consistent with past research (Sebire et al., 2009; Ten Brummelhuis & Trougakos, 2014), we reversed the external regulation items and calculated a combined scale (α = .76), with low scores reflecting high external regulation and low intrinsic motivation and high scores reflecting low external regulation and high intrinsic motivation. This aligns with the theoretical conceptualization of motivation as a self-determination continuum, with intrinsic motivation and external regulation as the extremes (Ryan & Deci, 2000). Moreover, the scale enables us to compare relationships between physical activity and work outcomes for those with pure intrinsic motivation (scoring also low external regulation) to those with pure external regulation (scoring also low on intrinsic motivation).

**Measuring physical activity by Fitbits.** To get a better understanding of the timing of physical activity, we calculated the percentage of days on which recorded physical activity bouts occurred only before 9am (22.0%), only between 9am and 4pm (17.3%), as well as both before 9am and between 9am and 4pm (7.2%). In 38.8% of the days, participants did not engage in physical activity (intense and long enough to be recorded by the Fitbit), whereas 14.8% of days represent missing data.

We examined if the physical activity periods registered in each heart rate zone were experienced as intended exercise by participants, as opposed to commuting or unplanned walking during the day. Participants reported in the exercise log to have exercised that workday in 98.4% of vigorous physical activity bouts and 91.7% of moderate physical activity bouts registered by the Fitbit. On days in which the Fitbit only registered light physical activity minutes, however, only 53% of participants indicated to have engaged in a workout before the end of the workday. It thus seems justified to use the term physical activity for our study, as the Fitbit registered physical activity that was both intended (i.e., exercise) as well as unintended.

**Power Analyses**

We followed the power analysis procedure for fixed parameter estimates in nested models as described by Scherbaum and Ferreter (2009). In our mediation model with a sample size of 74 employees with five daily measurements, the standard errors of our dependent variables are .145 (concentration) and .143 (task withdrawal), resulting in a power of .93 and .94, respectively. For the cross-level interaction models, we used PINT version 2.1 (Snijders & Bosker, 1993) to calculate standard errors. Using a sample size of 71 and 5 days per participant, the standard errors ranged from .12 to .45, resulting in a power larger than .80 in all cross-level moderation models, assuming a medium effect size of .50 and α set to .05.

**Additional Analyses**

**Self-rated outcome variables**. We analyzed the mediation model (Table A) and calculated the indirect effects (Table B) using self-rated concentration and self-rated task withdrawal. Concentration was measured with three items (average α = .68) from Lee et al. (2003), which were originally developed to measure concentration on study tasks. We picked three items that are applicable to work tasks and reworded them to make them suitable for daily measurement (e.g., “Today, I became easily absorbed in my work tasks”). Task withdrawal was measured with four items from Bennett and Robinson's (2000) organizational deviance scale. We chose the four items (average α = .74) from this scale that overlap with physical and psychological task withdrawal (Lehman & Simpson, 1992), and specifically target behaviors in which employees do not engage with their task, or do not put in effort into their work (e.g., “Today, I put little effort into my work” and “Today, I spent too much time fantasizing or daydreaming instead of working”).

We also analyzed the moderated mediation model (Table C), and the indirect effects of physical activity at three intensity levels on self-rated work focus for intrinsically versus extrinsically motivated exercisers (Table B). For all additional analyses, we used the exact same technique as used for the models reported in our article.

**Control Model**. We estimated a control mediation model (Table D) that included all control variables including exercise duration, as well as three mediator variables that might provide alternative explanations for a relationship between physical activity and work focus. First, we controlled for positive affect and negative affect, as physical activity is known to have a positive influence on mood (Reed & Ones, 2006) and affective states, can contribute to work outcomes (Calderwood, Ten Brummelhuis et al., 2020).We measured positive activated affect with four joviality items (average α = .92) of the PANAS-X (Watson & Clark, 1994) that capture an affective state of activation (Russell, 2003). Negative affect was measured with four items (average α = .83) based on the negative affect scale by Van Katwyk et al. (2000). In the afternoon log, participants indicated the extent to which they experienced positive affective states (e.g., *energetic, happy*) and negative (e.g., anxious, hostile) at that moment, using a scale ranging from 1 (*very slightly or not at all*) to 5 (*very much*). Then, we controlled for physical fatigue as an alternative explanatory mechanism because physical activity requires body effort, resulting in physical exhaustion (Ament & Verkerke, 2009), whereas physical exhaustion might hinder focus (Kahneman, 1973). Physical exhaustion was measured by the four highest loading items from the six-item scale developed by Frone and Tidwell (2015), adjusted for daily measurement. In the afternoon surveys, we instructed participants to “Rate the extent to which you are experiencing the following RIGHT NOW.” Sample items are “I feel physically exhausted” and “I feel physically worn out” (average α = .94), with answer categories ranging from 1 (*very slightly or not at all*) to 5 (*very much*). Note that including exercise duration, which was reported by participants in the exercise log, reduced the sample size from 345 to 305.

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**Table A**

*Multi-Level Path Analysis Results for Mediation Model with Self-Reported Outcome Variables*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Afternoon Self-Efficacy | | | Afternoon Ego-Depletion | | | Self-Rated Workday Concentration | | | Self-Rated Workday Task Withdrawal | | |
| Predictor | *γ* | *SE* | *P-value* | *γ* | *SE* | *P-value* | *γ* | *SE* | *P-value* | *γ* | *SE* | *P-value* |
| ***Level 1 Predictors*** |  |  |  |  |  |  |  |  |  |  |  |  |
| Vigorous physical activity | .016\* | .006 | .011 | -.005 | .010 | .621 | -.006 | .006 | .293 | .004 | .003 | .190 |
| Moderate physical activity | -.003 | .004 | .483 | -.004 | .005 | .427 | -.001 | .003 | .772 | -.001 | .002 | .501 |
| Light physical activity | .004\* | .001 | .010 | .000 | .002 | .867 | .001 | .002 | .648 | -.001 | .001 | .279 |
| Morning self-efficacy | -.018 | .077 | .818 |  |  |  | .149 | .085 | .079 | .106 | .065 | .104 |
| Morning ego-depletion |  |  |  | .200\*\* | .068 | .004 | .094 | .073 | .196 | .108\* | .044 | .015 |
| Afternoon self-efficacy |  |  |  |  |  |  | .196\*\* | .072 | .007 | -.104 | .053 | .052 |
| Afternoon ego-depletion |  |  |  |  |  |  | -.132\* | .054 | .015 | .139\*\* | .051 | .006 |
| Effect size *f*2 |  |  |  |  |  |  | .119 |  |  | .096 |  |  |

*Note. N* = 340 (74 employees). \*\*\* *p* < .001, \*\* *p* < .01, \* *p* < .05. Unstandardized estimates. Two-tailed tests of statistical significance. Model fit: Chi square = 18.18, df = 9, p = .033, CFI = .96, TLI = .85, RMSEA = .055, SRMR within = .044.

**Table B**

*Significant Test of Indirect Effects Using Monte Carlo Bias Corrected 95% Confidence Intervals*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Self-Rated Concentration | | | | Self-Rated Task Withdrawal | | | |
| Mediation Model | *γ* | *SE* | *LL* | *UL* | *γ* | *SE* | *LL* | *UL* |
| Vigorous physical activity → Self-efficacy → Outcome | .003 | .002 | .345-D03 | .743-D02 | -.002 | .001 | -.436-D02 | .259-D06 |
| Moderate physical activity → Self-efficacy → Outcome | -.001 | .001 | -.285-D02 | .917-D03 | .000 | .000 | -.540-D03 | .158-D02 |
| Light physical activity → Self-efficacy → Outcome | .001 | .000 | .110-D03 | .176-D02 | .000 | .000 | -.111-D02 | .984-D07 |
|  | Self-Rated Concentration | | | | Self-Rated Task Withdrawal | | | |
| Moderated Mediation Model | *γ* | *SE* | *LL* | *UL* | *γ* | *SE* | *LL* | *UL* |
| ***Intrinsic Motivation for Exercise*** |  |  |  |  |  |  |  |  |
| Vigorous physical activity → Self-efficacy → Outcome | .005 | .003 | .116-D02 | .113-D01 | -.003 | .002 | -.743-D02 | -.512-D03 |
| Moderate physical activity → Self-efficacy → Outcome | -.003 | .001 | -.601-D02 | -.550-D03 | .002 | .001 | .244-D03 | .400-D02 |
| Light physical activity → Self-efficacy → Outcome | .001 | .000 | .932-D06 | .206-D02 | -.001 | .000 | -.145-D02 | -.290-D06 |
| ***External Regulation for Exercise*** |  |  |  |  |  |  |  |  |
| Vigorous physical activity → Self-efficacy → Outcome | -.001 | .002 | -.510-D02 | .341-D02 | .001 | .001 | -.198-D02 | .364-D02 |
| Moderate physical activity → Self-efficacy → Outcome | .004 | .002 | .756-D03 | .767-D02 | -.002 | .001 | -.508-D02 | -.334-D03 |
| Light physical activity → Self-efficacy → Outcome | .001 | .001 | -.175-D03 | .211-D02 | -.000 | .000 | -.141-D02 | .969-D06 |

*Note. N* = 340 (74 employees) for main effects; *N* = 306 (71 employees) for moderation models. Unstandardized estimates. Lower and Upper Limits in scientific notation (e.g., .492D-03 = .000492).

**Table C**

*Multi-Level Path Analysis Results for Moderated Mediation Model with Self-Reported Outcome Variables*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Afternoon Self-Efficacy | | | Afternoon Ego-Depletion | | | Self-Rated Workday Concentration | | | Self-Rated Workday Task Withdrawal | | |
| Predictor | *γ* | *SE* | *P-value* | *γ* | *SE* | *P-value* | *γ* | *SE* | *P-value* | *γ* | *SE* | *P-value* |
| ***Level 1*** |  |  |  |  |  |  |  |  |  |  |  |  |
| Vigorous physical activity | .009 | .006 | .135 | -.001 | .012 | .905 | -.009 | .006 | .117 | .006 | .003 | .056 |
| Moderate physical activity | .002 | .004 | .631 | -.004 | .007 | .556 | -.001 | .004 | .670 | -.001 | .002 | .771 |
| Light physical activity | .004\* | .002 | .011 | .000 | .002 | .913 | .001 | .002 | .752 | -.001 | .001 | .373 |
| Morning self-efficacy | -.042 | .076 | .586 |  |  |  | .180\* | .088 | .040 | .108 | .066 | .102 |
| Morning ego-depletion |  |  |  | .210\*\* | .073 | .004 | .108 | .076 | .155 | .090 | .050 | .072 |
| Afternoon self-efficacy |  |  |  |  |  |  | .216\*\* | .072 | .003 | -.124\* | .052 | .017 |
| Afternoon ego-depletion |  |  |  |  |  |  | -.130\* | .050 | .010 | .061\*\* | .056 | .003 |
| ***Level 2*** |  |  |  |  |  |  |  |  |  |  |  |  |
| Exercise motivation (intrinsic – extrinsic) | .143 | .129 | .286 | -.307\* | .127 | .016 |  |  |  |  |  |  |
| Exercise motivation\*Vigorous physical activity | .029\* | .014 | .046 | -.015 | .017 | .387 |  |  |  |  |  |  |
| Exercise motivation\*Moderate physical activity | -.026\*\*\* | .007 | .001 | .005 | .011 | .619 |  |  |  |  |  |  |
| Exercise motivation\*Light physical activity | .000 | .002 | .859 | .001 | .003 | .741 |  |  |  |  |  |  |
| Effect size *f*2 |  |  |  |  |  |  | .295 |  |  | .515 |  |  |

*Note. N* = 306 (71 employees). \*\*\* *p* < .001, \*\* *p* < .01, \* *p* < .05. Unstandardized estimates. Two-tailed tests of statistical significance.

**Table D**

*Multi-Level Path Analysis Results for Mediation Model with Alternative Mediator Variables*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Afternoon Positive Affect | | | Afternoon Negative Affect | | | Afternoon Physical Fatigue | | |
| Predictor | *b* | *SE* | *P-value* | *b* | *SE* | *P-value* | *b* | *SE* | *P-value* |
| ***Level 1 Predictors*** |  |  |  |  |  |  |  |  |  |
| Vigorous physical activity | .013 | .010 | .548 | -.013\* | .006 | .017 | .004 | .009 | .650 |
| Moderate physical activity | .006 | .005 | .376 | .001 | .005 | .912 | .001 | .006 | .882 |
| Light physical activity | .005\* | .002 | .120 | -.001 | .002 | .361 | -.001 | .003 | .637 |
| Exercise duration | .088 | .061 | .684 | -.086 | .071 | .225 | .090 | .102 | .377 |
| Morning positive affect | .170\*\* | .050 | .001 |  |  |  |  |  |  |
| Morning negative affect |  |  |  | .158 | .086 | .065 |  |  |  |
| Morning physical fatigue |  |  |  |  |  |  | .265\*\*\* | .059 | .000 |

**Table 2** *Continued*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Afternoon Self-Efficacy | | | Afternoon Ego-Depletion | | | Coworker rated Concentration | | | Coworker rated Task Withdrawal | | |
| Predictor | *b* | *SE* | *P-value* | *b* | *SE* | *P-value* | *b* | *SE* | *P-value* | *b* | *SE* | *P-value* |
| ***Level 1 Predictors*** |  |  |  |  |  |  |  |  |  |  |  |  |
| Vigorous physical activity | .016\* | .006 | .015 | -.006 | .008 | .591 | -.010 | .008 | .217 | .009 | .009 | .348 |
| Moderate physical activity | -.007 | .005 | .144 | -.001 | .008 | .851 | .009 | .007 | .224 | -.007 | .007 | .329 |
| Light physical activity | .005\*\* | .002 | .002 | .000 | .002 | .998 | -.007\*\* | .002 | .003 | .002 | .003 | .337 |
| Exercise duration | .049 | .075 | .511 | -.075 | .076 | .327 | .083 | .117 | .479 | -.046 | .061 | .447 |
| Morning positive affect |  |  |  |  |  |  | .107 | .125 | .392 | -.103 | .09 | .295 |
| Morning negative affect |  |  |  |  |  |  | -.196 | .123 | .112 | .023 | .107 | .830 |
| Morning physical fatigue |  |  |  |  |  |  | -.015 | .095 | .871 | -.032 | .108 | .767 |
| Morning self-efficacy | -.029 | .074 | .694 |  |  |  | .344\* | .163 | .035 | -.288\* | .132 | .029 |
| Morning ego-depletion |  |  |  | .215\*\*\* | .053 | .000 | .196 | .153 | .200 | -.056 | .135 | .677 |
| Afternoon positive affect |  |  |  |  |  |  | .067 | .127 | .596 | -.033 | .119 | .780 |
| Afternoon negative affect |  |  |  |  |  |  | -.066 | .093 | .478 | .018 | .094 | .848 |
| Afternoon physical fatigue |  |  |  |  |  |  | -.150 | .100 | .135 | .110 | .077 | .151 |
| Afternoon self-efficacy |  |  |  |  |  |  | .324\*\* | .109 | .003 | -.297\*\* | .097 | .002 |
| Afternoon ego-depletion |  |  |  |  |  |  | .198\* | .100 | .047 | -.196 | .115 | .088 |
| Effect size *f*2 |  |  |  |  |  |  | .151 |  |  | .082 |  |  |

*Note. N* = 305 (74 employees). \*\*\* *p* < .001, \*\* *p* < .01, \* *p* < .05. Unstandardized estimates. Two-tailed tests of statistical significance. Model fit: Chi square = 70.43, df = 41, p = .003, CFI = .97, TLI = .92, RMSEA = .049, SRMR within = .046.