Cardiorespiratory Fitness Protects Against Stress-Related Symptoms of Burnout and Depression

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Objective: To examine how cardiorespiratory fitness and self-perceived stress are associated with burnout and depression. To determine if any relationship between stress and burnout/depression is mitigated among participants with high fitness levels.

Methods: 197 participants (51% men, mean age=39.2 years) took part in the study. The Åstrand bicycle test was used to assess cardorespiratory fitness. Burnout was measured with the Shirom-Melamed Burnout Questionnaire (SMBQ), depressive symptoms with the Hospital Anxiety and Depression Scale (HAD-D). A gender-matched stratified sample was used to ensure that participants with varying stress levels were equally represented.

Results: Participants with moderate and high fitness reported fewer symptoms of burnout and depression than participants with low fitness. Individuals with high stress who also had moderate or high fitness levels reported lower scores on the SMBQ Tension subscale and the HAD-D than individuals with high stress, but low fitness levels.

Conclusion: Better cardiovascular fitness seems to be associated with decreased symptoms of burnout and a better capacity to cope with stress.

Practical implications: Promoting and measuring cardiorespiratory fitness can motivate employees to adopt a more physically active lifestyle and thus strengthen their ability to cope with stress exposure and stress-related disorders.

Keywords: Åstrand bicycle test, burnout, cardiorespiratory fitness, depression, gender, mental health, stress, submaximal fitness test

1. Introduction

Having good cardiorespiratory fitness is associated with reduced cardiovascular risk markers, morbidity [1] and mortality [2-5], as well as reduced risks of cancer [6,7].

At work, it has been shown that men with low and medium cardiorespiratory fitness may have an increased risk of cardiovascular and all-cause mortality if exposed to high physical work demands [8]. Significant cross-sectional and prospective relationships exist between cardiorespiratory fitness and mental health [9]. While a considerable amount of studies have shown that high cardiorespiratory fitness protects against the development of depressive symptoms [10-12], the question of whether cardiorespiratory fitness is associated with stress-related symptoms of occupational burnout is not thoroughly investigated [13,14].

Exposure to occupational stress is associated with both physical impairments [15] and mental health problems [16], including increased burnout [17]. These complications negatively impact work productivity [18] and worker health [19,20]. Earlier studies have revealed that symptoms of burnout can lead to a deeper depression [21,22]. Epidemiological studies have demonstrated that mild to severe burnout is highly prevalent in the general working population [23,24], and that once developed, symptoms of burnout remain persistent over time [25]. Given this knowledge, public health authorities and businesses have recognized the benefits of occupational health promotion to reduce the number of employees suffering from occupational burnout [26].

A physically active lifestyle can be viewed as an important component of occupational health promotion [27], with prevalence rates of physical inactivity and low cardiorespiratory fitness being high in most industrialized societies [28]. The relative health risk associated with physical inactivity and low cardiorespiratory fitness are comparable to other major health damaging behaviors such as smoking [29]. In addition, low cardiorespiratory fitness is associated with decreased job performance [30], increased absenteeism rates [31] as well as increased risk for future cardiovascular disorders [8].

Field studies have been used to examine whether cardiorespiratory fitness and physical activity mitigate the relationship between naturally occurring stress and symptoms of ill-health [32]. While past research revealed that physical activity is negatively related to burnout [21,33-35], little research exists on cardiorespiratory fitness as buffer against the consequences of stress and whether elevated fitness attenuates the relationship between perceived stress and depressive symptoms. Thus, the aim of this present study was to examine if cardiorespiratory fitness and perceived stress are associated with symptoms of occupational burnout and depression, and whether participants' fitness levels moderate the assumed positive relationships between perceived stress and symptoms of burnout and depression.

2. Methods

2.1. Participants

Participants were recruited through daily newspaper advertisements and from an ongoing longitudinal cohort study conducted by the Institute of Stress Medicine, Gothenburg, Sweden. The cohort study investigated different aspects of psychosocial work environment, stress, and stress-related health in a random sample of 6000, mainly health care workers. For inclusion in the present study, participants were considered if they were in general good health, aged 25-50 years, reported a body mass index between 18.5 and 30 kg/m^2, and not taking any medication. A screening test was performed with all participants including anthropometric measurements and blood samples. The blood samples were used to exclude participants with anemia, current infections, diabetes, thyroid illness, vitamin B12 deficiency, or excessive alcohol consumption. In total, 200 participants (100 men and 100 women) were included in the sample.

2.2. Inclusion criteria for stratified sample

The overall aim of the main project was to explore the relationship between perceived levels of stress and different biological measures including cardiorespiratory fitness. For this purposes, it was considered important to ensure that the participants reported different levels of stress. To achieve a stratification of the sample based on participants' stress level, a single-item question of the Nordic Questionnaire for Psychological and Social Factors at Work (QPS Nordic) [36] was applied. The item read: "Stress means a situation in which a person feels tense, restless, nervous, or anxious, or is unable to sleep at night because his/her mind is troubled all the time. Do you currently feel this kind of stress?" Participants had five response options: "not at all" (1), "just a little" (2), "to a certain extent" (3), "quite much" (4), and "very much" (5). This single-item measure of stress was associated with psychological and physical symptoms as well as mental resources, and proved to be associated with self-reported physical activity in previous studies [36,37]. To ensure a gender-matched, but varied sample in terms of degrees of perceived stress, 40 participants (20 men, 20 women) were included in this study from each of the five stress categories. Thus, consecutive inclusion was applied among those individuals who reported interest in participating in the study, until the final number of participants was reached for each category.

Only participants with gender and age-adjusted cardiorespiratory fitness scores (n=197) were included in this study; 51% were men, and the mean age for the total sample was 39.2 years (SD=8.1). As shown in Table 1, 70% reported being married or living with someone, whereas 26% reported living alone. Sixty-three percent had an occupation that required higher education (college/university degree), 25% had an occupation that did not require higher education, and 10% were students or unemployed (7% missing). Eighty-seven percent were non-smokers, and 6% smokers (5% missing). The regional ethical review board in Gothenburg, Sweden, approved the study, and all participants provided written informed consent before participation.

2.3. Measures

2.3.1. Mental health measures

The Shirom-Melamed Burnout Questionnaire [SMBQ: 38] was used to assess self-reported symptoms of occupational burnout. Different aspects of burnout (physical fatigue, emotional exhaustion, tension, listlessness, and cognitive weariness) were measured by using 22 items with a Likert scale from 1 (*almost never*) to 7 (*almost always*). The SMBQ has proven to be highly correlated with other reliable burnout measures such as the Maslach Burnout Inventory [39]. In the present study, scores of ≥ 3.75 were used as a cut-off for high burnout [39], and scores of ≥ 4.40 as a cut-off for burnout according to the clinical threshold [40].

Additionally, the 7-item depression subscale of the Hospital Anxiety and Depression scale (HAD-D) was administered to assess symptoms of depression [41]. Questions regarding mood changes that may occur during the course of depression were answered on a 4-point Likert scale from 0 (*never*) to 4 (*almost always*). Satisfactory reliability and validity of the HAD-D has been shown previously [42]. HAD-D scores > 10 were considered clinically relevant [41].

2.3.2. Cardiorespiratory fitness

Cardiorespiratory fitness was assessed with the Åstrand indirect test of maximal oxygen uptake (VO2max) [43]. This submaximal test was performed in the morning (starting at 7:00 am, 7:30 am, or 8:00 am) on a bicycle ergometer (Monark Ergomedic 828E). A submaximal fitness test was used because of its ability to measure fitness among employees with poor health and low fitness levels. The pedaling frequency was 50 rounds per minute (rpm), and the workload was adjusted so that the heart rate was kept between 130 beats per minute (bpm) and 160 bpm in participants younger than 40 years old and between 120 bpm and 150 bpm in participants older than 40 years old. The participants rated their perceived exertion on the Borg scale [44], and were advised to maintain their exercise intensity level at 13 or 14 (slightly strenuous). A steady state was reached when the heart rate remained stable after 5 or 6 minutes, or whenever a stabilization occurred afterwards. A nomogram based on sex, workload, and mean steady-state value of heart rate was used to estimate the peak oxygen uptake (l/min) [45]. Additionally, a correction factor for age was used, and the value of oxygen uptake was corrected for body weight and then expressed as peak VO2max (ml/kg/min), which is considered a valid estimate of cardiorespiratory fitness [46]. Table 2 provides an overview of gender and age-adjusted cut-offs and explains how we have defined low, moderate and high fitness in the present study.

2.4. Statistical analyses

A series of two-factorial analyses of variance (ANOVAs) was calculated to test main and interaction effects of cardiorespiratory fitness and perceived stress. The ANOVAs compared three groups of participants with low, moderate and high fitness levels[1]. To ensure a sufficient number of participants per cell, participants with low perceived stress (scoring 1-3 [not at all - to a certain extent]) were compared to individuals with high perceived stress (scoring 4-5 [quite much - very much]). Mental health outcomes (burnout, depression) were treated as continuous variables. Main and interaction effects were tested against the 5% level of significance, and eta square (η^2) coefficients were used to evaluate the strength of relationships. Chi^2-tests were used to analyze if cardiorespiratory fitness was related to marital status, occupation, and smoking (see Table 1) and since none of these factors were found to be related to cardiorespiratory fitness, no further covariates were added to the model. Gender and age adjusted cut-offs were used to create groups with low, moderate, and high cardiorespiratory fitness, thus allowing a gender-matched sampling procedure. Finally, Chi^2-tests were used to determine whether clinically relevant levels of burnout and depression depend on participant stress and cardiorespiratory fitness levels.

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3. Results

3.1. Participant characteristics and stress, occupational burnout, depression and cardiorespiratory fitness

Proportion of males/females, marital status, educational level or smoking status did not differ between the three different fitness groups or between the high and low stress groups (Table 1). Descriptive statistics for all continuous variables included in this study are shown in Table 3 (including the Cronbach´s alpha for all scales). The mean scores on the SMBQ Total index ranged from 1.0 to 6.4 (*M*=3.1, *SD*=1.3), while the HAD-D scores varied between 0 and 15 (*M*=3.14, *SD*=2.83). In total, 31% (*n*=61) of the participants reported high burnout, and 17% (*n*=34) clinically relevant burnout levels, whereas 3% (*n*=5) of the sample reported clinically relevant HAD-D scores. Additionally, the scores for cardiorespiratory fitness ranged from 22 to 68 ml/kg per minute with a mean of 40.0 (*SD*=8.9).

3.2. Relationship between stress, cardiorespiratory fitness, occupational burnout and depression

Table 4 shows that participants who reported high levels of perceived stress scored higher on the SMBQ Total index and on all SMBQ subscales (see Figure 1a). The level of explained variance ranged from 18 to 27%.

As shown in Figure 1b, a significant main effect associated with fitness occurred for the SMBQ Total index, showing that increased fitness levels are associated with reduced symptoms of burnout. Comparable fitness-based main effects emerged for the SMBQ Burnout dimension (including symptoms of physical fatigue and emotional exhaustion) as well as the SMBQ Listlessness subscale.

Among participants with low fitness, 38% (*n*=18) reported high burnout levels and 23% (*n*=11) reported clinical burnout levels on the SMBQ Total index, whereas only 11%

(*n*=5) reported clinical levels on the HAD-D. In comparison, the percentage of participants reporting high burnout (37%, *n*=25), clinical burnout (19%, *n*=13), and clinical depression (*n*=0) was somewhat lower among participants with moderate fitness levels, whereas the lowest number of individuals with high or clinical burnout levels were found in the high fitness group (high: 23%, *n*=18; clinical: 13%, *n*=10). Similar to the moderate fitness group, none of the participants with high fitness reported clinically relevant levels of depression. Nevertheless, significant group differences based on participants' fitness status existed only with regard to clinical depression, $Chi^2(2,196)=16.62$, $p<.001$, but not for high burnout, $Chi^2(2,196)=4.70$, $p=.09$, and clinical burnout, $Chi^2(2,196)=2.50$, $p=.29$.

Additionally, a significant interaction between cardiorespiratory fitness and stress was observed for the SMBQ Tension subscale (Table 4). Among participants who reported low stress, no substantial differences were found with regard to the SMBQ Tension scores between participants with differing fitness levels. In contrast, moderate and high fitness were associated with reduced feelings of tension among participants who exhibited high stress (see Figure 2).

With regard to the number of participants with high SMBQ Total index scores, similar figures existed among participants in the low stress group with low (11%, *n*=3 of 27), moderate (21%, *n*=9 of 43), and high fitness levels (12%, *n*=6 of 49), $Chi^2(2,119)=1.78$, $p=.41$. In contrast, among participants with high stress levels, the number of participants with high burnout scores was significantly lower (39%, *n*=12 of 31) in the high fitness group as compared to participants with low (71%, *n*=15 of 21) and moderate fitness levels (64%, *n*=16 of 25), $Chi^2(2,77)=6.43$, $p<.05$.

With respect to clinically relevant burnout levels, a similar picture appeared although the group differences were not significant in both the low stress group, $Chi^2(2,119)=0.23$, $p=.89$, and the high stress group, $Chi^2(2,77)=4.33$, $p=.12$. Among participants with low stress scores, clinically relevant levels of burnout were rare among all three fitness groups (low: 4%, *n*=1 of 27; moderate: 5%, *n*=2 of 43; high: 6%, *n*=3 of 49). In the high stress group, the portion of participants with clinically relevant burnout scores was lowest among participants with high fitness levels (23%, *n*=7 of 31), compared to counterparts with low (48%, *n*=10 of 21) or moderate (44%, *n*=11 of 25) fitness levels.

For the HAD-D, significant main effects occurred for fitness and perceived stress, with a significant interaction term between fitness and stress (Table 4). Higher levels of stress were associated with increased depressive symptoms (Figure 1a). In contrast, increased fitness levels were related to lower symptom scores for depression (Figure 1b). Individuals who reported high stress levels and who had high fitness levels also reported fewer symptoms of depression compared to counterparts with high stress but low fitness levels (Figure 3). With regard to clinically relevant levels of depression, all participants with critical HAD-D values > 10 (*n*=5) had low fitness levels. Four of these participants reported high stress levels, whereas one participant reported low stress levels.

4. Discussion and Conclusion

4.1. Discussion

The main finding of this cross-sectional study is that individuals reporting high levels of perceived stress with concomitantly high cardiorespiratory fitness relative to their gender and age, report lower levels of tension and symptoms of depression, compared to counterparts with high stress and a low cardiorespiratory fitness. Moreover, high cardiorespiratory fitness was associated with lower levels of depression and burnout. Specifically, participants with moderate and high gender and age-adjusted fitness scored lower on the SMBQ Total index, the SMBQ Burnout and Listlessness subscales as well as the HAD-D than their low fitness counterparts.

The present study expands prior knowledge in the sense that few studies pinpoint cardiorespiratory fitness as a potential buffer of stress-related mental symptoms. Roth and

Holmes [47] have tested whether high scores on a sub-maximal fitness test buffer depressive symptoms. However, a stress-attenuating function of cardiorespiratory fitness was only found if the severity of total health complaints (not depression) was used as an outcome. In contrast, several studies have shown that stress-related symptoms of depression are mitigated if participants report high leisure time physical activity [48-50]. While most studies have focused on the impact of physical activity [e.g., 51], only a few studies have examined cardiorespiratory fitness as a possible stress buffer. Using sub-maximal fitness tests, partial support was found for a fitness-based stress buffer effect in two university student studies [47,52]. In contrast, high fitness did not attenuate the stress-illness relationship when cardiorespiratory fitness was assessed with a maximal fitness test among adults [53,54].

To the best of our knowledge, this is the first study that examined the interplay between objectively measured cardiorespiratory fitness, perceived stress levels and occupational burnout. Carraro et al. [14] found that self-perceptions of physical fitness were associated with reduced symptoms of burnout among Italian physical education teachers. While our own previous analyses indicated no significant relationships between the raw scores of the Åstrand indirect test of maximal oxygen uptake and occupational burnout [13], differing results emerged in the present study when gender and age-adjusted standards were used to classify participants in groups of low, moderate and high fitness, and particularly when groups of high and low perceived stress were studied. Thus, perceived stress is associated with increased symptoms of burnout and depression, which accords with prior studies [17]. Interestingly, in a group of individuals reporting low levels of perceived stress, no relationship was found between cardiorespiratory fitness and the SMBQ Tension subscale, whereas in a group of individuals reporting high stress, moderate and high cardiorespiratory fitness were associated with decreased tension. Thus, cardiorespiratory fitness is related to symptoms of tension and depression only in a highly stressed group (which included more individuals reporting high tension and depression symptoms). In a group of individuals reporting low stress levels, the variation of burnout and depressive symptoms is likely to be low. Thus, detecting a plausible relationship between cardiorespiratory fitness and mental symptoms in such a group is unlikely.

The relationship between cardiorespiratory fitness and burnout may be mediated via biological factors (e.g., immune function, sleep physiology) [55], behavioral factors and psychosocial influences. Individuals with high cardiorespiratory fitness may engage in more leisure time physical activity [56], which has proven to be associated with increased social support [57], improved sleep [58] or favorable cognitive mindsets such as optimism and self-efficacy [59]. Nevertheless, cardiorespiratory fitness and physical activity level are independent risk factors for cardiovascular disease, and cardiorespiratory fitness is partially determined by genetics [60].

With regard to symptoms of depression, our findings point towards a linear relationship between cardiorespiratory fitness and depressive symptoms. Specifically, while improvements are seen for moderate fitness levels, participants with high fitness had an even lower risk of scoring high on the HAD-D. This accords with the extant body of research [10,11], but furthers previous investigations whereby gender and age-adjusted cut-off criteria were easy to handle for the testers and understandable for the participants. The relationship between cardiorespiratory fitness and depression could be related to exercise-related secretion of noradrenalin, serotonin or brain-derived neurotrophic factor [61]. Other explanations are that more regular engagement in exercise activities is related to a repeated occurrence of positive mood states [62], or psychological factors such as satisfaction of basic psychological needs [63], increased capacity for self-control [64], and improved self-perceptions and perceived competence regarding one’s body and its functioning [65].

While the associations found in our study were substantial, the cross-sectional nature of the data does not allow conclusions regarding cause and effect. We cautiously suggest stress-buffering effects of cardiorespiratory fitness in individuals reporting high levels of perceived stress. Different explanations are conceivable: Cardiorespiratory fitness has proved to be associated with decreased reactivity and increased recovery from psychosocial stress [66]. Moreover, participation in exercise activities might promote a mindset of mental toughness [67], which in turn operates as a stress-buffering resource [68].

There are several limitations to mention. Since our study was cross-sectional, we cannot draw conclusions about causality. Also, depression was seldom reported in this sample and thus, statistical analysis regarding clinically relevant depression is impossible. Therefore, we have treated depression mainly as a continuum of severity. While the selection procedure ensured that participants varied on their perceived stress levels, such large variations in mental health and cardiorespiratory fitness variables were not reached. Nevertheless, the fitness scores revealed a relatively large range (from 22 to 68 ml/kg per minute). Broad ranges also existed for burnout (from 1.0 to 6.4) and depression (from 0 to 15). Lastly, the participants in this study are generally healthy and educated, as shown by the large number of participants with higher education (58%). This makes it difficult to generalize our results to groups with lower socio-economical status and poor health and wellbeing.

Future controlled interventional trials – with a special focus on highly stressed employees – are needed to examine whether participants who increase their cardiorespiratory fitness will decrease their symptoms of burnout (and depression), and increase their stress buffering capacity [69]. Furthermore, the findings of the present study could be replicated with different fitness tests that provide gender and age-adjusted cut-offs. Moreover, cross-lagged panel studies could help to delve into the reciprocal nature of fitness and mental health over time.

4.2. Conclusions

The present study shows that participants with low cardiorespiratory fitness levels report higher symptoms of burnout and depression than their counterparts with moderate and high fitness levels. More importantly, the association between cardiorespiratory fitness and mental health is particularly evident among individuals who report high stress. Thus, individuals reporting high levels of perceived stress with high cardiorespiratory fitness relative to their gender and age also report less tension and fewer symptoms of depression compared to counterparts with high stress levels but low cardiorespiratory fitness.

4.3. Practical implications

Our findings suggest that an easily administrated submaximal fitness test offering gender- and age-adjusted standards can be used to promote and motivate especially employees with high perceived stress levels to adopt a more physically active lifestyle and thus strengthen their ability to cope with stress exposure and stress related disorders.

Author confirmation

The authors confirm that all personal identifiers have been removed or disguised so the persons described are not identifiable and cannot be identified through the details of the story.

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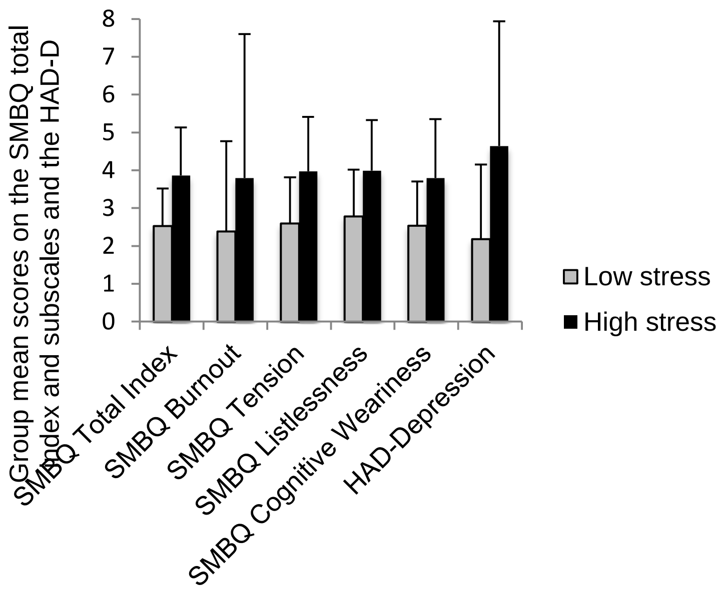

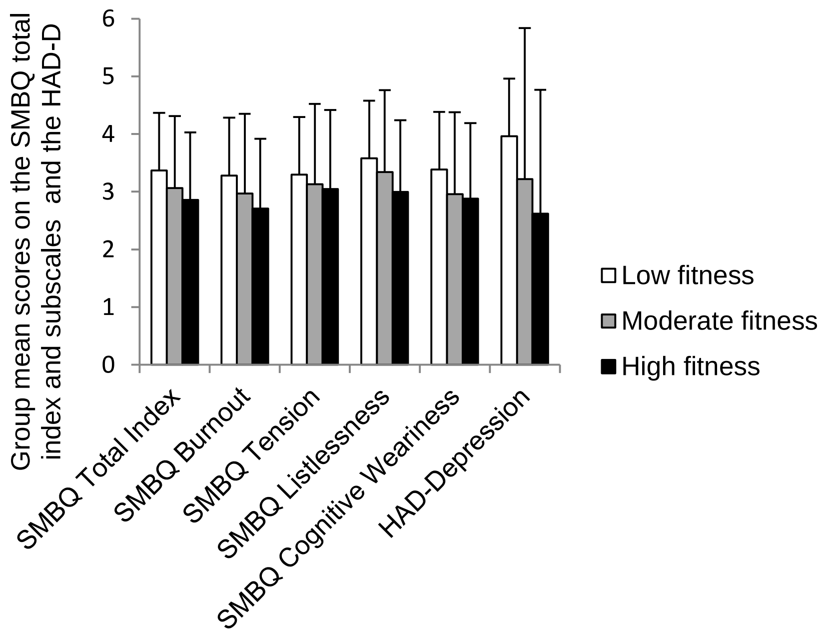

Figure 1. Differences Between Participants With Low Versus High Stress (1a) and Participants with Low, Moderate and High Fitness (1b) in Burnout and Depressive Symptoms

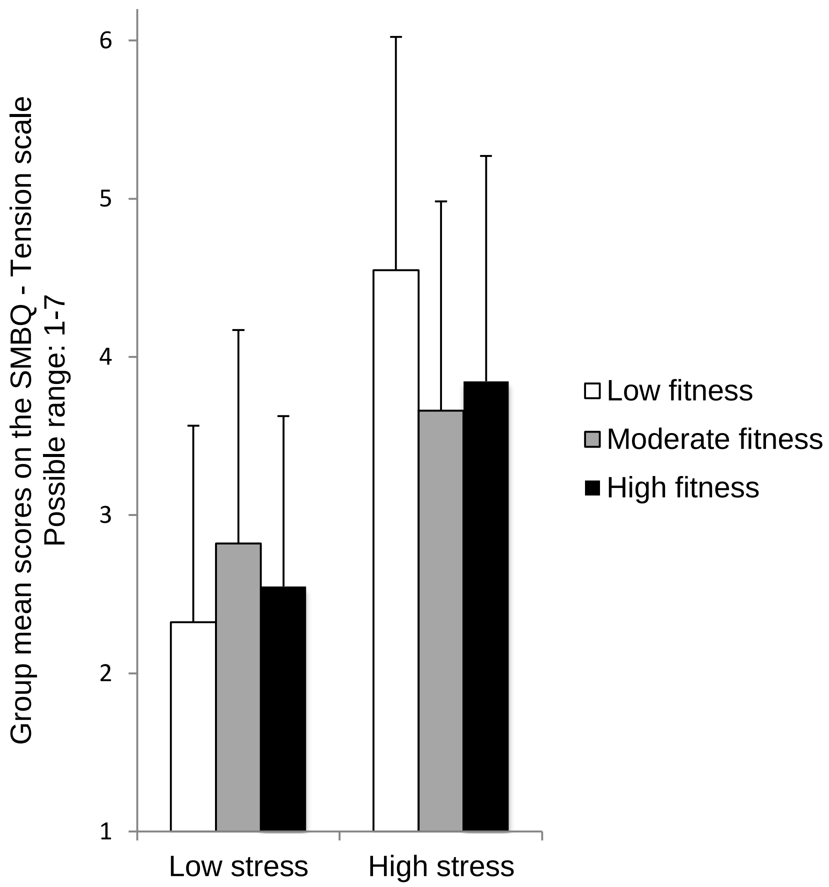

Figure 2. Differences Between Participants With Low, Moderate and High Fitness On the SMBQ – Tension Scale, if Experiencing Low Versus High Stress

Table 1.

Social and Demographic Background of the Total Sample, and Groups with Differing Cardiorespiratory Fitness and Stress Levels

	Total sample	Cardiorespiratory fitness			Stress	
		Low	Moderate	High	Low	High
Gender: n (%)						
Women	97 (49)	20 (21)	38 (39)	39 (40)	60 (62)	37 (48)
Men	100 (51)	28 (28)	30 (30)	42 (42)	60 (60)	40 (40)
Marital status: n (%)						
Married/living with someone	138 (70)	36 (75)	46 (68)	56 (69)	85 (71)	53 (69)
Single	51 (26)	11 (3)	17 (25)	23 (28)	30 (25)	21 (27)
Missing	8 (4)	1 (2)	5 (7)	2 (3)	5 (4)	3 (4)
Occupation: n (%)						
Higher education	115 (58)	27 (56)	39 (57)	49 (61)	65 (54)	50 (65)
No higher education	49 (25)	11 (23)	17 (25)	21 (26)	35 (29)	14 (18)
Student/unemployed	19 (10)	6 (13)	5 (7)	8 (10)	10 (8)	9 (12)
Missing	14 (7)	4 (8)	8 (10)	3 (4)	10 (8)	4 (5)
Smoking status: n (%)						
Smoker	171 (87)	5 (10)	5 (8)	6 (7)	107 (89)	64 (83)
Non-smoker	16 (8)	42 (88)	56 (82)	73 (90)	8 (7)	8 (10)
Missing	10 (5)	3 (2)	7 (10)	2 (3)	5 (4)	5 (7)
Cardiorespiratory fitness: n (%)						
Low	48 (24)	---	---	---	27 (23)	21 (27)
Moderate	68 (35)	---	---	---	43 (36)	25 (33)
High	81 (41)	---	---	---	50 (42)	31 (41)
Perceived stress: n (%)						
Low	120 (61)	27 (23)	43 (36)	50 (42)	---	---
High	77 (39)	21 (27)	25 (33)	31 (40)	---	---

Note. No significant differences (*p*>.05) found with regard to sex, marital status, occupation, smoking status, fitness and perceived stress between participants with differing levels of cardiorespiratory fitness and stress.

Table 2.

Cut-offs for VO2max (ml/kg x min) Dependent on Participants' Age and Gender Used to Classify Participants in Groups with Differing Cardiorespiratory Fitness Levels

Age	Very low	Low	Average	High	Very high
Men					
15-19 years	-32	33-39	40-47	48-55	≥56
20-29 years	-33	34-41	42-50	51-59	≥60
20-39 years	-28	29-35	36-44	45-53	≥54
40-49 years	-24	25-32	33-40	41-48	≥49
50-59 years	-22	23-28	29-35	36-42	≥43
60-69 years	-18	19-23	24-29	30-36	≥37
Women					
15-19 years	-29	30-37	38-45	46-52	≥53
20-29 years	-31	32-39	40-47	48-55	≥56
20-39 years	-27	28-35	36-43	44-51	≥52
40-49 years	-23	24-30	31-37	38-44	≥45
50-59 years	-20	21-26	27-32	33-39	≥40
60-69 years	-17	18-22	23-28	29-34	≥35

Note. Categories used in the present study: Low fitness=very low to low, moderate fitness=average, high fitness=high to very high.

Table 3. *Descriptive Statistics for the Total Index and the Subscales of the Shirom-Melamed Burnout Questionnaire and the Depression Subscale of the Hospital Anxiety and Depression Scale*

	M ± *SD*	α[1]	*Min*	*Max*	*Skew*	*Kurt*
SMBQ[1] – Total score	3.1 ± 1.3	0.97	1.0	6.4	0.5	-0.6
SMBQ[1] – Burnout	2.9 ± 1.4	0.93	1.0	6.9	0.7	-0.3
SMBQ[1] – Tension	3.1 ± 1.5	0.89	1.0	6.5	0.4	-1.0
SMBQ[1] – Listlessness	3.3 ± 1.4	0.88	1.0	6.8	0.4	-0.7
SMBQ[1] – Cognitive weariness	3.0 ± 1.5	0.94	1.0	7.0	0.6	-0.4
HAD-D[2]	3.1 ± 2.8	0.80	0.0	15.0	1.4	2.4

Note. [1]α = Cronbach's alpha, [1]SMBQ=Shirom-Melamed Burnout Questionnaire, [2]HAD-D=Depression Subscale of the Hospital Anxiety and Depression Scale