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Health Promotion Action Plan Can Improve the Level of Physical Activity in Secondary School Teachers*

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ABSTRACT

The aim of this pilot study was to investigate the relationships between health promoting activities and physical activity of secondary school teachers. Forty secondary school teachers took part in the study by completing a questionnaire on health promotion (HPQ) and physical activity (IPAQ). A multiple regression analysis was performed to examine whether health promotion activities predict the level of physical activity of teachers. The results showed that a comprehensively designed, properly implemented, and evaluated health promotion action plan sufficiently motivates employees to ensure their good psycho-physical well-being through regular physical activity. The implementation of a health promotion plan can be a long-term investment in the health of employees.

Keywords:
job-related physical activity; recreation; prediction; health

1. Introduction

Health is an overall value and a key factor in the quality of life of individuals and society. A healthy individual is more productive, so maintaining and improving health should be in the interest of every employer. Therefore, health care is not only in the interest of the individual, but in the long term, health care is the task of the entire society.

The workplace is one of the most important environments that affect the physical, mental, economic and social well-being of employees, the health of their families, communities, and society (Chu et al., 2000). In addition to the workplace, workers' health is also influenced by preventive measures such as awareness-raising and education about health-promoting activities. The workplace has been identified as an important setting for health promotion because it can reach large groups of people, and make use of a natural social network (Dishman, Oldenburg, O'Neal, & Shephard, 1998). By implementing workplace health promotion, positive changes could be introduced which would also improve the general success of the organization. One of the factors that positively influence employee psychosocial well-being is physical activity (PA) (Brown, Gilson, Burton, & Brown, 2011).

Even brief advice or brief intervention (e.g., verbal advice, discussion, encouragement) of no more than 30 minutes duration to promote PA can have a positive impact on self-reported PA in adults (Lamming et al., 2017). Education is one of the main factors for self-regulation of PA; better educated individuals - such as teachers - are more likely to translate intentions into PA (Schüz, Li, Hardinge, McEachan, & Conner, 2017) and need different intervention strategies compared to individuals with lower educational attainment.

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Godin et al. (2010) found that individuals with higher education form more stable intentions, which are more resilient to temptations that might endanger the translation of intention into action. In addition, it is possible that specific occupational characteristics (e.g., less fixed time constraints) could facilitate translation of intentions into PA. To date, it is unclear which *behavioural change techniques* (e.g., action planning, prompting self-monitoring of the outcome, social support) are most effective in changing and sustaining PA by increasing self-efficacy for PA; different populations require different approaches (Tang, Smith, Sharry, Hann, & French, 2018).

In Slovenia, the participation of employers in the health care of employees is regulated by law at the national level. The Act on Health and Safety at Work (2011) with its articles 6 and 32 obliges the employer to plan and implement workplace health promotion. The employer must provide the necessary resources and monitoring of health promotion activities to maintain and promote the physical and mental health of workers. This law applies to schools at all levels.

In addition, the employer must include in the safety declaration, with a risk assessment, the promotion of health at work, which is laid down in Article 76 of the Act (2011). The Ministry of Health, in cooperation with the National Institute of Public Health also developed guidelines and recommendations for the implementation of health promotion. Improving the work organization and working environment, encouraging employees to actively participate in health-promoting activities, facilitating a healthy lifestyle, and promoting personal development are the main points of the above-mentioned guidelines and recommendations.

The teaching profession is demanding and causes problems in physical and mental health, which is reflected mainly in poor work in the classroom, greater sick leave or even leaving the profession (Slivar, 2009). Therefore, it is important to provide teachers with adequate support for health enhancing PA. Workplace health promoting interventions can improve physical activity in some subjects, and these changes may in turn improve selected health outcomes, work culture, and job stress (Conn, Hafdahl, Cooper, Brown, & Lusk, 2009). However due to the complex content of the problem and heterogeneity in studies, further research is needed. No study was conducted to test whether health promotion activities in Slovenian schools are related to a higher level of PA among teachers. As a first step in exploring these relations, a pilot study has been conducted to find out which health promotion activities, and to what extent, help change teachers' levels of physical activities.

2. Methods

A questionnaire on health promotion (HPQ) and International physical activity questionnaire (IPAQ) have been sent to forty secondary school teachers. Most of the participants were women (82.5%) which is consistent with the national average. According to the national statistical office, there were 82% of women and 18% of men employed as secondary school teachers in 2015/16. Most of the participants was 41–50 years old (52.5%) and worked in the school with 301–600 students that is the most frequent school size on the national level. The number of participants from the eastern vs. western region was well balanced (Table 1).

Table 1. Socio-demographic characteristics of the sample

Characteristics		**N = 40**	**% sample**
Gender	Female	33	82.5
	Male	7	17.5
Age	<31	1	2.5
	31–40	7	17.5
	41–50	21	52.5
	51–60	10	25.0
	>60	1	2.5
Region	West	21	52.5
	East	19	47.5
School size	<301 students	8	20.0
	301–600 students	28	70.0
	>600 students	4	10.0

A long version of the IPAQ to measure the overall level of PA and job-related PA over the last seven days in terms of frequency, duration, and intensity of activity was used. A standardized scoring process was followed (IPAQ, 2005). The IPAQ is a widely used, valid, and reliable international tool for measuring levels of PA among 18- to 65-year-old adults (Craig et al., 2003). Test-retest reliability was measured with Spearman correlation coefficients ranging from 0.96 to 0.46, most of them around 0.80. Furthermore, interclass correlation coefficient calculated by Vandelanotte et al. (2005) ranged from 0.60 to 0.83 indicating moderate reliability for moderate intensity PA and very good reliability for high intensity and leisure-time PA. The HPQ was developed to measure health promotion activities that were used in schools according to the law. The content validity of the HPQ was conducted by two experts that had over two decades of experience in PA research. In addition, the HPQ was sent to two secondary school teachers for face validity. All comments have been considered in the final version of the questionnaire. Furthermore, the Cronbach alpha (α = .777) showed very good internal consistency of the HPQ.

Two multiple regression analysis were conducted. In the first analysis, the level of job-related PA (in MET minutes/week) was used as a criterion variable and health promotion variables and socio-demographic variables were used as predictors. In the second analysis, the overall level of PA (in MET minutes/week) was used as a criterion variable and health promotion variables and socio-demographic variables were used as predictors. The VIF value of all predictors was less than 10, pointing out no problems with multicollinearity (Kock & Linn, 2012). Statistical analysis was conducted with the statistical software Jeffreys's Amazing Statistics Program (JASP, Version 0.13.1).

3. Results

Model 0, which includes the gender and age of the teacher, the possibility of teachers to participate in the planning of health promotion policy (PZPN4), and analysis of teachers' physical activity needs (PZPN9), was able to explain 50% of the variance in job-related PA.

Table 2. Results of Multiple regression analysis with job-related PA as a criterion variable

	B	β	t	p	VIF	F	p	R^2
Overall model						2.041	0.058	0.612
Model 0						8.608	< .001	0.496
Constant	5063.852		6.015	< .001				
Gender	-868.068	-0.368	-3.030	0.005	1.022			
Age	-396.426	-0.348	-2.865	0.007	1.023			
PZPN4	-205.580	-0.214	-1.777	0.084	1.009			
PZPN9	-766.895	-0.377	-3.136	0.003	1.002			

Note. The overall model includes Gender, Age, School region and 14 HPQ predictors; PZPN4 – possibility to participate in the planning of health promotion policy; PZPN9 – analysis of teachers' PA needs; VIF – variance inflation factor

The variables from Model 0 were statistically significantly predictive of the job-related PA, F (4, 35) = 8.608, p <.001. PZPN9 (Beta = - .377, t = -3.136, p = .003), gender (Beta = -.368, t = -3.030, p = .005), and age (Beta = -.348, t = -2.865, p = .007) were the variables that best predicted the level of job-related physical activities (Table 2). Unless schools analyse the teachers' needs for PA, we can expect that the level of job-related PA will decrease by 767 MET minutes/week. We can also predict lower job-related PA in women and older teachers. For every decade we can expect the job-related PA to decrease by 396 MET minutes/week.

Model A, which includes the teacher gender, access to free fruit (PZOI6), the option to opt for healthy meals and beverages at work (PZOI7), and the stimulation of teachers for regular recreation (PZPN11), was able to explain 24% of the variance in overall PA (Table 3). The variables from Model A were statistically significantly predictive of the overall PA, F(4, 35) = 2.810, p = .040.

Table 3. Results of Multiple regression analysis with overall PA as a criterion variable

	B	β	t	p	VIF	F	p	R^2
Overall model						0.752	0.723	0.368
Model A						2.810	0.040	0.243
Constant	16757.998		4.020	< .001				
Gender	-3488.518	-0.345	-2.334	0.025	1.011			
PZOI6	-668.769	-0.087	-0.588	0.560	1.012			
PZOI7	-1705.943	-0.241	-1.626	0.113	1.016			
PZPN11	-1434.990	-0.230	-1.547	0.131	1.019			

Note. The overall model includes Gender, Age, School region and 14 HPQ predictors; PZOI6 – access to free fruit; PZOI7 – opt for healthy meals and drinks at work, PZPN11 - encouraging to be regularly physically active outside work, VIF – variance inflation factor

Gender (Beta = -.345, t = -2.334, p = .025) was a variable that statistically significantly predicts the overall level of PA (Table 3). We can expect women to achieve 3489 MET minutes/week less than their male counterparts. The data showed that most women were moderately physically active (39.4%), while most men were highly physically active (57.1%) (Table 4). Only 27.3% of women were highly physically active. More important predictors related to overall PA included PZPN11 (Beta = -.230, t = -1.547, p = .131) (Table 3). To the extent that the employer stimulates teachers for regular recreation, it can be expected that their overall PA will increase by 1435 MET minutes/week. Additionally, a higher proportion of teachers were classified as highly physically active (63.6%) in case the employer stimulated them for regular recreation. If they were not motivated, the proportion of highly physically active teachers would have been significantly lower (16.7%).

Table 4. Percentage of men and women according to their overall PA level

	Gender		
	Men	Women	Total
Low PA level	14.3 %	33.3 %	30.0 %
Moderate PA level	28.6 %	39.4 %	37.5 %
High PA level	57.1 %	27.3 %	32.5 %
Total	100.0 %	100.0 %	100.0 %

4. Discussion

4.1 Job-related physical activity

The possibility of teachers to participate in the planning of health promotion policy at work, analysis of teachers' PA needs, as well as their age and gender can help us predict teachers' level of job-related PA.

Our results showed that the gender and age of teachers are significantly linked to job-related PA. Among the groups of teachers who showed to be more prone to lower levels of PA are women and older teachers. Low participation level in workplace health promotion programmes may partly explain the large differences in the effectiveness of aforementioned programmes (Matson-Koffman, Brownstein, Neiner, & Greaney, 2005; Proper, Koning, van der Beek, Hildebrandt, Bosscher, & van Mechelen, 2003), thus it is necessary to pay special attention to these two groups in the planning of health promotion policy in schools. One of the mechanisms to increase their PA levels is to actively engage them in health promotion activities. The active role of teachers in health promotion policy has proven to be an important predictor of the job-related PA level. This is in line with previous findings, that teachers should participate in school management and organization and that they should be active and engaged in school policy decisions regarding health promotion (Deschesnes, Martin, & Hill, 2003). This is especially important during the early phases of implementation (Adamowitsch, Gugglberger, & Dür, 2017). Another important predictor of the job-related PA is analysing teachers' PA needs. Therefore, school management should consider individualizing PA to teachers' desires and requests. According to our results, teachers' active role in health promotion activities can increase their

level of job-related PA by 973 MET minutes/week. One of the criteria to qualify someone as a moderately active individual is to achieve at least 600 MET minutes/week. This means that measures, such as actively involving employees in promoting health can change teachers' exercise habits and consequently significantly affect their health.

As expected, Model A, which predicts teachers' overall PA, exhibited lower predictive power through selected variables than Model 0, which predicts teachers' job-related PA. The predictors from the HPQ mainly related to activities referring to the promotion of a healthy lifestyle at work, and to a lesser extent to the incentives for leisure-time PA, housework, and transportation PA. With the predictor variables, we were able to more clearly predict the variance of job-related PA, which is only one of four aspects of the overall PA (IPAQ, 2005). Overall PA consists of PA in leisure-time (e.g., recreation), at home (e.g., house maintenance), commuting (e.g., cycling to work) and at work (e.g., walking as part of the work).

4.2 Overall physical activity

Participants in our sample were evenly distributed in terms of overall PA: 30.0% low physically active, 37.5% moderately physically active, and 32.5% highly physically active. Nonetheless, a larger proportion of women were low or moderately physically active, while most men were highly physically active.

The gender of teachers was significantly associated with overall PA; therefore, women, who can be expected to be less physically active would need special attention in health promotion policy. Offering healthy food and beverage options, access to free fruit, and encouraging them to be regularly physically active are activities that can significantly change their PA habits, not only at work, but also at home, in their leisure-time or the way they commute to work. With the implementation of the latter activities, we can expect the overall level of PA to increase by 3810 MET minutes/week. One of the criteria for qualifying someone as highly physically active is to achieve at least 3000 MET minutes/week. Thus, through thoughtful measures, we can significantly influence teachers' PA habits and, consequently, their health. Workers with higher PA levels tend to report fewer burnout symptoms when they perceive high stress levels (Gerber et al., 2020). Recent research report one hour a day of leisure-time PA and ninety minutes of moderate-to-vigorous PA is associated with the highest benefits regarding work-related stress (Lachance, Corbiere, Hains-Monfette, & Bernard, 2020).

5. Conclusion

The results showed that a comprehensively designed, properly implemented, and evaluated health promotion action plan sufficiently motivates employees to ensure their regular PA. The implementation of a health promotion plan can be a long-term investment in the health of employees.

References

Adamowitsch, M., Gugglberger, L., & Dür, W. (2017). Implementation practices in school health promotion: findings from an Austrian multiple-case study. *Health promotion international*, *32*(2), 218-230.

Brown, H. E., Gilson, N. D., Burton, N. W., & Brown, W. J. (2011). Does physical activity impact on presenteeism and other indicators of workplace well-being?. *Sports Medicine*, *41*(3), 249-262.

Conn, V. S., Hafdahl, A. R., Cooper, P. S., Brown, L. M., & Lusk, S. L. (2009). Meta-analysis of workplace physical activity interventions. *American journal of preventive medicine*, *37*(4), 330-339.

Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., ... & Oja, P. (2003). International physical activity questionnaire: 12-country reliability and validity. *Medicine & science in sports & exercise*, *35*(8), 1381-1395.

Deschesnes, M., Martin, C., & Hill, A. J. (2003). Comprehensive approaches to school health promotion: how to achieve broader implementation? *Health promotion international*, *18*(4), 387-396.

Dishman, R. K., Oldenburg, B., O'Neal, H., & Shephard, R. J. (1998). Worksite physical activity interventions. *American journal of preventive medicine*, *15*(4), 344–361.

Gerber, M., Schilling, R., Colledge, F., Ludyga, S., Pühse, U., & Brand, S. (2020). More than a simple pastime? The potential of physical activity to moderate the relationship between occupational stress and burnout symptoms. *International Journal of Stress Management*. 27, 53-64.

Health and Safety at Work Act (2011). *Official Gazette of RS*, no. 43/11.

International Physical Activity Questionnaire – IPAQ (2005). *Guidelines for data processing and analysis of the International Physical Activity Questionnaire*. Accessed February 26, 2020 from http://www.ipaq.ki.se/scoring. pdf

Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for Information Systems*, *13*(7).

Lamming, L., Pears, S., Mason, D., Morton, K., Bijker, M., Sutton, S., & Hardeman, W. (2017). What do we know about brief interventions for physical activity that could be delivered in primary care consultations? A systematic review of reviews. *Preventive Medicine*, *99*, 152-163.

Matson-Koffman, D. M., Brownstein, J. N., Neiner, J. A., & Greaney, M. L. (2005). A site-specific literature review of policy and environmental interventions that promote physical activity and nutrition for cardiovascular health: what works? *American journal of health promotion : AJHP*, *19*(3), 167-193.

Proper, K. I., Koning, M., van der Beek, A. J., Hildebrandt, V. H., Bosscher, R. J., & van Mechelen, W. (2003). The effectiveness of worksite physical activity programs on physical activity, physical fitness, and health. *Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine*, *13*(2), 106-117.

Schüz, B., Li, A. S. W., Hardinge, A., McEachan, R. R., & Conner, M. (2017). Socioeconomic status as a moderator between social cognitions and physical activity: Systematic review and meta-analysis based on the Theory of Planned Behavior. *Psychology of Sport and Exercise*, *30*, 186-195.

Slivar, B. (2009). *Raziskava o poklicnem stresu pri slovenskih vzgojiteljicah, učiteljicah in učiteljih [A research on job related stress in Slovenian preschool- and elementary school-teachers]*. Ljubljana: ZRSŠ.

Tang, M. Y., Smith, D. M., Mc Sharry, J., Hann, M., & French, D. P. (2019). Behavior change techniques associated with changes in postintervention and maintained changes in self-efficacy for physical activity: a systematic review with meta-analysis. *Annals of Behavioral Medicine*, *53*(9), 801-815.

Vandelanotte, C., De Bourdeaudhuij, I., Philippaerts, R., Sjöström, M., & Sallis, J. (2005). Reliability and validity of a computerized and Dutch version of the International Physical Activity Questionnaire (IPAQ). *Journal of physical activity and health*, *2*(1), 63-75.

Lachance, J. P., Corbiere, M., Hains-Monfette, G., & Bernard, P. (2020). Clearing your mind of work-related stress through moderate-to-vigorous and leisure-time physical activity: What" dose" it takes?. *medRxiv*. doi: https://doi.org/10.1101/2020.05.11.20097931