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Social Support for Exercise and Its Effect on Physical Activity Level among Female Teachers

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ABSTRACT

Background: Determining the level of physical activity and factors in female teachers can be effective in planning health promotion interventions. Therefore, this study was conducted to determine the level of physical activity and social factors affecting female teachers in Rafsanjan.

Methods: in this descriptive study, the level of physical activity and the social factors were examined in 198 female high school teachers in Rafsanjan City in 2019. The International Short Form Physical Activity Questionnaire (IPAQ) was used to determine physical activity levels. Sallis's social support questionnaire for exercise was used to determine the level of social support. Data were analyzed using SPSS 18 and chi-square and Spearman's correlation coefficient.

Results: The level of physical activity in female teachers was lower than the recommended level so that only 34.3% had the minimum physical activity at the recommended level. In terms of intensity of physical activity, most physical activities were reported as walking. The physical activity of this group was not statistically significant based on age ($p = 0.09$), work experience ($p = 0.70$), level of education ($p = 0.28$), and income level ($p = 0.082$). Also, there was a significant correlation between all types of physical activity and social support in all aspects.

Conclusion: Providing social support for exercise by family and friends has been identified as an effective physical activity factor. Therefore, it seems necessary to design educational programs to improve teachers' awareness and attitude, emphasizing the creation of a supportive environment by family, friends, and even related organizations.

Keywords: Physical Activity, Supportive Environment, Female Teachers, Social Support

Introduction

A low level of physical activity is one of the most important risk factors in developing chronic diseases such as heart disease, cancer, high blood pressure, diabetes, and obesity (Je et al., 2013). Meta-analysis studies show the beneficial effects of physical activity on overall mortality rate, cardiovascular disease mortality rate, and cancer mortality rate (Kelly et al., 2014). In addition to reducing the risk of death, regular physical activity supports healthy growth and aging and prevents many chronic diseases (Hupin et al., 2015). Regular physical activity is one of the ways to strengthen the immune system and prevent infectious diseases. It can also have positive psychological effects by reducing anxiety and depression, promoting self-confidence (Jalilian et al., 2011). It is necessary for everybody to have effective and desirable physical fitness in the first stages of life to not suffer from Physical Inactivity and Disabled Status by getting older (Sadeghpour et al., Hosseini, 2014).

The last century has been the cradle of modernity and the industrialization of human societies, which favors the emergence and development of inactive opportunities and behaviors. On the other hand, today's jobs are more focused on sedentary jobs, and a sedentary lifestyle is one of the health concerns among people (Rezende et al., 2016). Reports suggest that Iran is one of the countries with an above-average level of sedentary life. Studies show that in 2016, more than half of the Iranian adult population (54.7%) had insufficient physical activity, and it was less than the recommended minimum physical activity by the WHO (Mohebi et al., 2019). The level of physical activity worldwide in women is reported lower than in men, especially in low- and middle-income countries (Hallal et al., 2012). Iran is one of the countries with the highest differences in physical activity levels between men and women (Mielke et al., 2018).

This indicates the barriers to women's physical activities that should be analyzed. The reported insufficient physical activity is 61.9% in women and 45.3% in men, which is very high compared to other countries (Rosales-Ricardo et al., 2017). On the other hand, the job of a teacher is associated with inactivity, and the results of studies show that the level of physical activity in this group is lower than the recommended level (Mohebi et al., 2019). Studies in Iran have also shown that teachers' lifestyle is not healthy, especially in the field of physical activity, as Pirzadeh's study showed that only 24% of teachers had a sufficient level of physical activity (Pirzadeh et al., 2012). Regular physical activity is a complex behavior that is difficult to change and maintain and is influenced by a variety of individual factors, including demographic and cognitive variables (Jorvand, Tavousi, & Ghofranipour, 2018). Other factors that determine the level of physical activity in adulthood include environmental, social, economic, physical, and cultural factors (Tojari, A, Ilbeigi Asl, & Rezaean, 2011). Therefore, it is necessary to know the causes and factors that prevent women from participating in recreational sports activities (Ehsani et al., 2008). The teaching profession is characterized by relatively high absenteeism and early retirement (Moreb et al., 2017), leading to high-stress levels and poor physical health. Physical Readiness is needed to face specific problems and tensions of teaching (Bogaert et al., 2014). There are several reasons of low level of women's Mobility in work environments, such as lack of time, lack of knowledge, poor self-efficacy, lack of social support and motivation, lack of mental and psychological readiness to exercise, and also the lack of access to facilities has been cited as one of the main factors hindering sports participation (Edmunds et al., 2013).

According to the importance of improving the health of female teachers and its role in the health of this group and the teacher's role as a model for adolescents, it is necessary to determine the level of physical activity and the

factors that affect it. In Iran, limited studies have examined teachers' level of physical activity and the factors that affect them. Therefore, due to the importance of the subject, this study was conducted to evaluate the level of physical activity of teachers and it's determining social factors to plan to improve female teachers' physical activity.

Methods

This descriptive and cross-sectional study was conducted in 2019. All female high school teachers in Rafsanjan city were the study population, selected by census method, and finally, 198 people participated in the study. The study inclusion criteria were satisfaction with participating in the study and not having physical problems. Exclusion criteria were suffering from chronic illnesses such as muscle, skeletal and joint problems.

All participants were examined in terms of physical activity. To determine the level of physical activity, the International Short Form Physical Activity Questionnaire (IPAQ) was used, which measures all physical activities in the workplace, sports activities, and daily life activities. The World Health Organization has prepared this standard questionnaire, and its validity and reliability have been confirmed in different countries (Wendel-Vos et al., 2003). In Iran, the Persian version of this questionnaire has been used in many cases, and its validity has been confirmed (Emami et al., 2010). The ICC for the overall score and other IPAQ domains showed acceptable correlation coefficients (a > 0.7). For Construct validity, Aerobic fitness showed a weak positive correlation with all PA variables derived from the IPAQ (Vasheghani-Farahani et al., 2011).

The questionnaire itself examines three categories of physical activity, including walking, moderate-intensity, and high-intensity activities. The total score is calculated by adding the time and number of days of the week spent on moderate-intensity, high-intensity, and walking activities and converting them to METs (metabolic equivalent per minute). In particular, by using the basal level of energy expenditure (expressed in MET) assigned to each type of PA (the corresponding metabolic equivalent task is: 3.3 for walking; 4.0 for moderate-intensity physical activities; 8.0 for vigorous-intensity physical activities, respectively)

Finally, the intensity of physical activity is classified as low, medium and high and determines how many activities are in low, moderate, and high-intensity levels. In order to calculate MET, according to the questionnaire guidelines, the coefficient of the intense activity was considered 8, and the coefficient was considered 4 for the average activity, and it was 3.3 for walking. A social support questionnaire for exercise was used to determine the level of social support for exercise designed by Sallis et al. with 20 questions (Sallis et al., 1987). These questions were in the form of a five-part Likert scale in two social support dimensions: social support of friends and support of family members. This questionnaire was studied and validated in Iran by Noroozi et al., and its validity and reliability were analyzed using confirmatory and exploratory analyzing methods. In this study, Cronbach's α coefficients for the family and friend support were 0.89 and 0.86, respectively (Noroozi et al., 2011). To determine Body mass index (BMI), weight was measured by using digital scales, without shoes and with minimal clothing with an accuracy of 0.1 kg, and height was measured by using a non-elastic band meter which was installed on the wall with an accuracy of 0.5 cm, which a person was without shoes and heel in the condition which was stuck to the wall and looked forward.

The collected and completed data was analyzed using SPSS 20 software. Descriptive statistics such as central and scatter indexes were used to describe the demographic variables. The chi-square tests were used to examine the relationship between the studied variables and demographic variables. The correlation

coefficient test was used to determine the relationship based on the normal distribution of data. The alpha level of 0.05 was considered as a significant level. The present paper is a research project registered with the ethics code of IR.RUMS.REC.1398.048 in Rafsanjan University of Medical Sciences.

Results

The results showed that 198 teachers have participated in this study, and the majority of them were in the age range of 40-50 years. Most of the teachers' education level was at the bachelor's level (54%) and with an average income level (Table 1).

Table 1. Demographic and socio-economic characteristics of the study population

Variable		Number	Percentage
Age	20-30	16	8.1
	31-40	50	2503
	41-50	107	54
	Over 50	19	9.6
The economic situation	Weak	77	38.9
	Medium	113	57.1
	Good	8	4
Work experience	0-5	18	9.12
	5-15	56	28.32
	15-25	59	29.82
	25-30	60	30.32
Department of Education	Humanities	115	58.1
	Mathematic	48	24.7
	Biology	30	17.15
Academic Degrees	Associate	29	14.6
	Bachelor	112	56.6
	Master	50	25.3
	Doctoral	2	1
Employment Status	Recruitment	170	85.9
	conventional	20	10.17
	Contractual	5	2.1
Marital status	Single	24	1203
	Married	173	87.43
Wife's job	Employee	115	58
	self employed	67	34
	retired	12	6.1

According to the results of the physical activity level, female teachers had a low level of physical activity. A total of 41.4% of teachers had inadequate physical activity. 34.3% had the minimum recommended physical activity, and only 22.7% had high physical activity. The results of the Chi-squared test showed that statistically, a significant difference was not in the physical activity of this group which was based on age ($p = 0.09$), work experience ($p = 0.70$), level of education ($p = 0.28$), the existence of a suitable place for exercise ($p = 0.30$) and income level (p). $= 0.082$).

The results of physical activity level based on MET showed that most of the physical activity of teachers was related to walking, and the level of moderate and severe physical activity was low in this group (Table 2).

Examination of body mass index showed that about half of the teachers were overweight (**Figure 1**).

The results of the social support study showed that the level of social support for sports in all aspects, social support of friends, and social support of the family did not have a favorable situation (Table 3).

Table 2. The physical activity level of female teachers based on MET

Variable	Average	median	IQR	%CI 95
Walking (MET)	885.22	297	693	115.8 - 611.68
Moderate activity	697.5	0	680	466.81- 928.28
Intense activity	539.18	0	480	361.91 - 716.45

Interquartile range (IQR)
MET-minutes/week calculated according to the IPAQ protocol

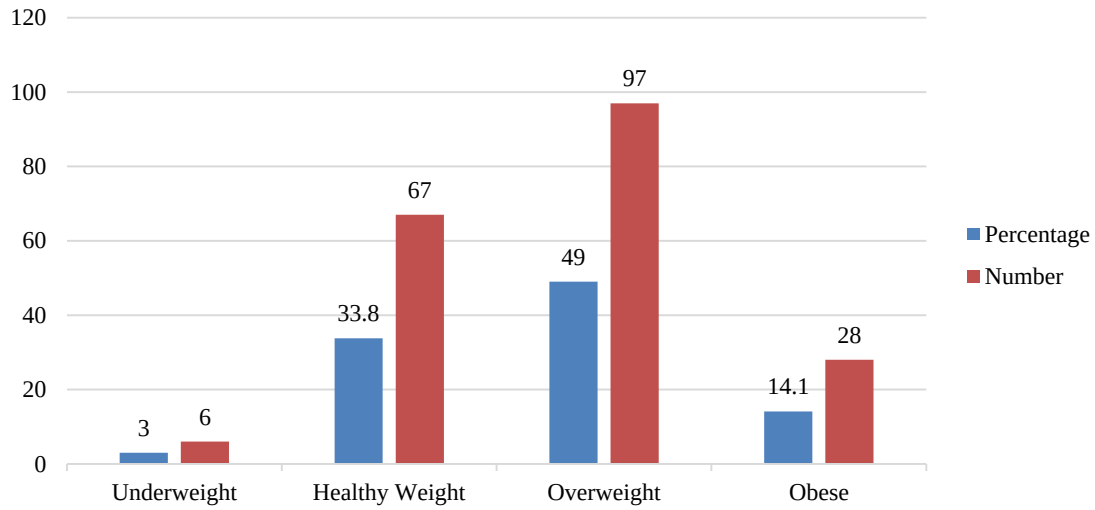

Figure 1. Prevalence of overweight and obesity among female teachers

Table 3. Social support scores and its dimensions in the study population

Variable	Average	Standard deviation	Score range
social support of family	18.27	10.34	0 - 60
Social support of friends	6.61	4.22	0 - 20
Verbal support	6.92	3.82	0 - 16
Practical support	6.22	3.36	0 - 16
Emotional support	96.6	52.3	0 - 20
Total social support	25.10	12.09	0 - 80

The results of Spearman's correlation coefficient test showed that there was a significant relationship between all types of physical activity and social support in all dimensions. However, this correlation has not been reported at a high rate. Also, the correlation test results showed a significant statistical relationship between body mass index and general physical activity level and average physical activity level, while this relationship was not significant in walking rate (Table 4).

Table 4. The matrix correlation coefficient between physical activity score and social support variables and body mass index

Variable	BMI	Total social support	Family social support	Social support of friends	Practical social support	Verbal social support	Emotional social support
General level of physical activity	-0.15*	0.23**	0.24**	0.16*	0.20**	0.25**	0.24**
walking	-0.072	0.18*	0.21**	0.10	0.22*	0.16*	0.14
Moderate activity	-0.17*	0.18*	0.19**	0.11	0.16*	0.18*	0.18*
Intense activity	-0.012	0.24**	0.22**	0.23**	0.26**	0.21**	0.21**

*significant level at ≤ 0.05 and ** significant level at ≤ 0.001

Discussion

The aim of the present study was to investigate the level of physical activity and the effective factors in female teachers. In the present study, the majority of participating teachers were in the middle ages, which is consistent with the results of similar studies in this field (Ghasemi, Rajabi Gilan, Reshadat, & Ahmadian, 2014). Studies show that physical activity is essential in middle-aged women before they reach old age (Niemelä et al., 2019). In the current situation, if some middle-aged and non-athletic women experience poor physical conditions, they will be at high *risk* for the *disease* and other possible problems (Kendall & Fairman, 2014). On the other hand, studies show that exercise and physical activity cause a significant quality of life and improve body mass index and cardiovascular indicators in middle-aged women (Abbasi & Mojtahedi, 2017). Therefore, it is necessary to examine the level of physical activity and advice teachers. The results of the present study have shown that the high percentage of female teachers had insufficient physical activity level and sedentary lifestyle, which is consistent with some conducted studies in this filed. According to the study of Brito et al., 46.3% of teachers had low level of physical activity (Brito et al., 2012). In conducted studies on Iranian teachers, the results showed that half of the teachers stated that they either do not exercise at all or do less physical activity (Darsareh et al., 2015). A study by Aligol et al. showed that 46.8% of women had a sedentary lifestyle (Aligol et al., 2017). Therefore, the majority of female teachers have not benefited from physical activity.

Regarding the levels of physical activity, this study showed that the highest level of physical activity was in walking form in female teachers, which is consistent with previous studies, showing that the highest level of physical activity in women was walking (Guimarães & Baptista, 2013).

In the present study, moderate and severe physical activity levels were very low, which is consistent with the results of the study by Mozumdar et al. (Mozumdar & Liguori, 2011). In explaining the higher physical activity in the form of walking, we can mention the lack of physical fitness of teachers to perform physical activity with higher intensity and no need for special facilities and planning for walking compared to higher intensity physical activity. According to the World Health Organization recommendations, moderate- and high-intensity physical activities are more important to promote health and prevent disease, but higher-intensity physical activity rates are very low. The disease control centers recommend at least 150 minutes of moderate-intensity physical activity to stay healthy (Pescatello et al., 2009). Moreover, the American Medical Exercise Association recommends high-intensity physical activity to reduce coronary heart disease risk (Dlugosz et al., 2013). Therefore, not only should female teachers' physical activity be emphasized, but also the intensity and number of physical activity cases should be taught and planned (Nowak, 2011).

The results showed that 49% of female teachers were overweight. These results are consistent with similar studies in this field (Rocha et al., 2015; Santos & Marques, 2013). In Iran, no study has been found to investigate the prevalence of obesity and overweight in female teachers, but in the general population study, 43.9% of women are overweighed (Ghadiri-Anari et al., 2013), which is almost consistent with the results of the present study.

The level of physical activity in this group was low and did not have enough intensity to affect weight loss, which can be a justification for being overweight in this group. no significant relationship has been found among demographic factors such as age, level of education, income, and the existence of a suitable place for playing sports, which is inconsistent with some studies (Al-Zalabani et al., 2015) which have shown that age and education are significantly associated with physical activity. Perhaps in justifying this contradiction, it can be pointed out that in our population, because the age and education differences were not significant due to the group's homogeneity, this difference did not show itself. Inconsistent results have been reported in studies on the relationship between education level and physical activity level (He & Baker, 2005).

However, no significant relationship was found in the relationship between physical activity level and income level in the present study. The results of this study are consistent with some studies in this field, but there are also contradictory results (Talaei et al., 2013). It seems that since physical activity in this group has been more like walking, the income has not had much effect. The level of social support for exercise was one of the influential factors in this study, which was significantly related to the overall score of social support and its dimensions, consistent with many studies in this field, as the study by Morowati et al., (Morowatisharifabad et al., 2019).

Social support is defined as receiving support from influential people in life to perform a behavior or achieve a goal (Glanz et al., 2008), which can be manifested in emotional, verbal, and practical forms. There was a significant and weak relationship between different dimensions of social support and physical activity in the present study.

In this study, the social support score of the family was more effective than the score of friend's support, which is consistent with the results of a Review study that showed social support, especially by family members, can be effective in improving physical activity (Smith et al., 2017).

This study is one of the limited numbers of studies that have examined the level of physical activity of teachers and social support of exercise in female teachers in an acceptable sample size. Since teachers influence adolescents as social role models, it is also important to examine the determinants of physical activity in teachers that have been addressed in this study.

One of the limitations of the present study is that the level of physical activity measurement is self-report, which may be associated with bias in the report ,the level of physical activity and physical fitness can be more accurately assessed by physiological measurement of physical activity and physical fitness of teachers.

Conclusion

The results of the present study showed that female teachers participating in this study didn't have the desired level of physical activity. On the other hand, physical activity is more limited to walk, and moderate and intense physical activity, which is recommended by the World Health Organization for women's health, is less common among female teachers. Social support of exercise by family and friends was identified as an influencing factor for physical activity. Therefore, it seems necessary to design educational programs to raise teachers' awareness and attitude to do more physical activity by emphasizing on creating a

supportive environment by family, friends, and even related organizations.

Conflict of interest

Authors declare no conflict of interest during the study period.

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Authors' Contribution

Conceptualization, M.A.; Methodology, F.A.H.; Formal Analysis, S.Sh.L.; Investigation, H.E.; Writing -Review & Editing, H.E.; Supervision, M.A.; Writing -Original Draft, H.E.

All authors read and approved the final manuscript and are responsible about any question related to the article.

References

Abbasi, M., Mojtahedi, H. (2017). The Effect of Aquatic Exercise on Quality of Life, Body Mass index and cardiovascular Markers in Middle-aged Women: a pilot study. Journal of Torbat Heydariyeh University of Medical Sciences, 5(1), 50-56.

Al-Zalabani, A.H., Al-Hamdan, N.A., Saeed, A.A. (2015). The prevalence of physical activity and its socioeconomic correlates in Kingdom of Saudi Arabia: A cross-sectional population-based national survey. Journal of Taibah University Medical Sciences, 10(2), 208-215.

Aligol, M., Mohammadi, N.K., Mohamadbeigi, A., Hardy, L.L., Ramezankhani, A. (2017). Physical activity and associated factors among women in a suburban area: findings of a community-based study in Iran. Journal of Fundamental and Applied Sciences, 9(1S), 1313-1326.

Bogaert, I., De Martelaer, K., Deforche, B., Clarys, P., Zinzen, E. (2014). Associations between different types of physical activity and teachers' perceived mental, physical, and work-related health. BMC Public Health, 14(1), 1-9.

Brito, W.F., Santos, C.L.D., Marcolongo, A.D.A, Campos, M.D., Bocalini, D.S., Antonio, E. L., Serra, A.J. (2012). Physical activity levels in public school teachers. Revista de Saúde Publica, 46(1), 104-109.

Darsareh, F., Aghamolaei, T., Ghanbarnejad, A. (2015). Prediction of Physical Activity based on BASNEF Model Constructs among female teachers in Schools of Bandar Abbas. Journal of Preventive Medicine, 2(1), 1-9.

Dlugosz, E.M., Chappell, M.A., Meek, T.H., Szafrańska, P.A., Zub, K., Konarzewski, M., Careau, V. (2013). Phylogenetic analysis of mammalian maximal oxygen consumption during exercise. Journal of Experimental Biology, 216(24), 4712-4721.

Edmunds, S., Hurst, L., Harvey, K. (2013). Physical activity barriers in the workplace. International Journal of Workplace Health Management, 6(3), 227-240.

Ehsani, M., Kouzehchian, H., Keshkar, S. (2008). An analysis of the constraints inhibiting women from participating in recreational sports in Tehran. Research on Sport Sciences, 5(17), 63-78.

Emami, R.S., Ardebili, H.E., Golestan, B. (2010). Effect of a Health Education Intervention on Physical Activity Knowledge, Attitude and Behavior in Health Volunteers. Hayat, 16.

Ghadiri-Anari, A., Jafarizadah, M., Zare, A., Mozaffari-Khosravi, H., Afkhami-Ardekani, M., & Shojaoddiny-Ardekani, Ahmad. (2013). Prevalence of obesity and overweight among adults in Iranian population (Yazd Province). Iranian Journal of Diabetes and Obesity, 5(2), 67-70.

Ghasemi, S.R., Rajabi G., N, Reshadat, S., Ahmadian, M. (2014). The relationship between job satisfaction and health-related quality of life in the teachers at Gilan-e-Gharb city in 2013. Journal of Rafsanjan University of Medical Sciences, 13(1), 13-26.

Glanz, K., Rimer, B.K., Viswanath, K. (2008). Health behavior and health education: theory, research, and practice: John Wiley & Sons.

Guimarães, A.C.D.A., Baptista, F. (2013). Prevalence of sufficient physical activity in middle-aged women from a Brazilian state capital. Revista Brasileira de Cineantropometria & Desempenho Humano, 15(6), 677-685.

Hallal, P.C., Andersen, L.B., Bull, F.C., Guthold, R., Haskell, W., Ekelund, U., Group, Lancet Physical Activity Series Working. (2012). Global physical activity levels: surveillance progress, pitfalls, and prospects. The lancet, 380(9838), 247-257.

He, X.Z., Baker, D.W. (2005). Differences in leisure-time, household, and work-related physical activity by race, ethnicity, and education. Journal of General Internal Medicine, 20(3), 259-266.

Hupin, D., Roche, F., Gremeaux, V., Chatard, J., Oriol, M., Gaspoz, J.M., Edouard, P. (2015). Even a low-dose of moderate-to-vigorous physical activity reduces mortality by 22% in adults aged≥ 60 years: a systematic review and meta-analysis. British Journal of Sports Medicine, 49(19), 1262-1267.

Jalilian, F., Emdadi, S.H., Mirzaie, M., Barati, M. (2011). The survey physical activity status of employed women in Hamadan University of Medical Sciences: The relationship between the benefits, barriers, self-efficacy and stages of change. Toloo-E-Behdasht, 9(4), 89-98.

Je, Y., Jeon, J.Y., Giovannucci, E.L, Meyerhardt, J.A. (2013). Association between physical activity and mortality in colorectal cancer: a meta-analysis of prospective cohort studies. International Journal of Cancer, 133(8), 1905-1913.

Jorvand, R., Tavousi, M., Ghofranipour, F. (2018). Determinants of the Regular Physical Activity among Employees of Healthcare Network: Application of Health Belief Model. J Educ Community Health, 5(3), 4-12.

Kelly, P., Kahlmeier, S., Götschi, T., Orsini, N., Richards, J., Roberts, N., Foster, C. (2014). Systematic review and meta-analysis of reduction in all-cause mortality from walking and cycling and shape of dose response relationship. The International Journal of Behavioral Nutrition and Physical Activity, 11(1), 132.

Kendall, K.L, Fairman, C.M. (2014). Women and exercise in aging. Journal of sport and health science, 3(3), 170-178.

Mielke, G.I., da Silva, I.M., Kolbe-Alexander, T.L., Brown, W.J. (2018). Shifting the physical inactivity curve worldwide by closing the gender gap. Sports Medicine, 48(2), 481-489.

Mohebi, F., Mohajer, B., Yoosefi, M., Sheidaei, A., Zokaei, H., Damerchilu, B., Khezrian, M. (2019). Physical activity profile of the Iranian population: STEPS survey, 2016. BMC Public Health, 19(1), 1266.

Morowatisharifabad, M.A., Abdolkarimi, M., Asadpour, M., Fathollahi, M.S., Balaee, P. (2019). Study on social support for exercise and its impact on the level of physical activity of patients with type 2 diabetes. Open access Macedonian journal of medical sciences, 7(1), 143.

Mozumdar, A., Liguori, G. (2011). Occupational physical activity and the metabolic syndrome among working women: a Go Red North Dakota study. Journal of Physical Activity and Health, 8(3), 321-331.

Niemelä, M.S., Kangas, M., Ahola, R.J., Auvinen, J.P., Leinonen, A., Tammelin, T.H., .Jämsä, T. J. (2019). Dose-response relation of self-reported and accelerometer-measured physical activity to perceived health in middle age—the Northern Finland Birth Cohort 1966 Study. BMC Public Health, 19(1), 1-9.

Noroozi, A., Ghofranipour, F., Heydarnia, A.R., Nabipour, I., Shokravi, F.A. (2011). Validity and reliability of the social support scale for exercise behavior in diabetic women. Asia-Pacific Journal of Public Health, 23(5), 730-741.

Nowak, M. (2011). Physical activity and its associations with other lifestyle elements in polish women. Journal of human kinetics, 29(1), 161-172.

Pescatello, L.S., Thompson, W.R., Gordon, N.F. (2009). A preview of ACSM's guidelines for exercise testing and prescription. ACSM's Health & Fitness Journal, 13(4), 23-26.

Pirzadeh, A., Sharifirad, G., Kamran, A. (2012). Healthy lifestyle in teachers. J Educ Health Promot, 1, 46. doi:10.4103/2277-9531.104816

Rezende, L.F.M., Sá, T.H., Mielke, G.I., Viscondi, J.Y.K, Rey-López, J.P., Garcia, L.M.T. (2016). All-cause mortality attributable to sitting time: analysis of 54 countries worldwide. American Journal of Preventive Medicine, 51(2), 253-263.

Rocha, S.V., Cardoso, J.P., Santos, C.A.D, Munaro, H.L.R., Vasconcelos, L.R.C., Petroski, E.L. (2015). Overweight/obesity in teachers: prevalence and associated factors. Revista Brasileira de Cineantropometria & Desempenho Humano, 17(4), 450-459.

Rosales-Ricardo, Y., Orozco, D., Yaulema, L., Parreño, Á., Caiza, V., Barragán, V., . . . Peralta, L. (2017). Physical activity and health in teachers. A review. Apunts Sports Medicine, 52(196), 159-166.

Sadeghpour, A., Sadeghpour, M., Hosseini, M.S. (2014). The relationship of physical activity levels and mental health: a case study at Isfahan University of Medical Sciences, Iran. Journal of Isfahan Medical School, 32(274).

Sallis, J.F., Grossman, R.M., Pinski, R.B., Patterson, T.L., Nader, P.R. (1987). The development of scales to measure social support for diet and exercise behaviors. Preventive Medicine, 16(6), 825-836.

Santos, M.N.D., Marques, A.C. (2013). Health conditions, lifestyles and occupational characteristics of teachers in a city in southern Brazil. Ciência & Saúde Coletiva, 18(3), 837-846.

Smith, G.L., Banting, L., Eime, R., O'Sullivan, G., Van Uffelen, J.G. (2017). The association between social support and physical activity in older adults: a systematic review. International Journal of Behavioral Nutrition and Physical Activity, 14(1), 56.

Talaei, M., Rabiei, K., Talaei, Z., Amiri, N., Zolfaghari, B., Kabiri, P., Sarrafzadegan, N. (2013). Physical activity, sex, and socioeconomic status: A population based study. ARYA atherosclerosis, 9(1), 51.

Tojari, F.A., Azarbayjani, M., Ilbeigi Asl, T., Rezaean, S. (2011). Tracking of physical activity from adolescence to adulthood: A population-based study. Sport Physiology &Management Investigations, 2(4), 77-85.

Vasheghani-Farahani, A., Tahmasbi, M., Asheri, H., Ashraf, H., Nedjat, S., Kordi, R. (2011). The Persian, last 7-day, long form of the International Physical Activity Questionnaire: translation and validation study. Asian Journal of Sports Medicine, 2(2), 106.

Wendel-Vos, G.W., Schuit, A.J., Saris, W.H., Kromhout, D. (2003). Reproducibility and relative validity of the short questionnaire to assess health-enhancing physical activity. Journal of Clinical Epidemiology, 56(12), 1163-1169.