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Designing and Examining a Model of the Effects of Physical Perceptions on Perceived Stress in Athletic Employees: The Mediation Role of Work-Family Conflict

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This study examined the theoretical model of direct and indirect relationships of physical perceptions latent construct including body attractiveness and physical self-worth on perceived stress of athlete employees (through the mediating role of work-family conflict and its components containing work to family conflict and family to work conflict). The population included all athlete employees at Tehran Province Gas Company (TPGC) from which 187 were selected with simple random method. The applied instruments were reliable and valid. Data analysis was performed using AMOS-20 software. From the findings, it was deduced that some modifications were needed by the proposed model and after applying these modifications, the model's fitness parameters were optimized. According to the data of this research, it can be concluded that one of the mechanisms of the impact of exercise on perceived stress of employees is first, it improves physical perceptions and then, physical perceptions have an influence on perceived stress both

directly and through increasing work-family conflict components. Theoretical explanations and future directions are outlined.

Keywords: physical perceptions, stress, work-family conflict

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Stress has always been the first issue of consideration for industrial/organizational psychologists (Amanollahnejad Kalkhoran, 2016). Moderate levels of stress have arousal effects on employees while high levels of stress have destructive effects on individuals and the organizations (Sembiyan & Patel, 2014).

According to the National Institute for Occupational Safety and Health (NIOSH) of the U. S., employees stress occurs when there is no coordination of their various needs with their abilities, capabilities and demands (In other words, lack of coordination between existing expectations of the jobholder and his/her interests and aspirations leads to development of stress on him/her) (Kingama, 2002). It seems that the major factors determining an individual's perception of stress can be found in his perception about self, family and job conditions.

The important point, now, is that stress along with opposite aspects of work-family relationships are two key factors of the global and fearful crisis in the current world. Therefore, it is clear in the current empirical research that our job can actually improve or fold our lives. Work-family conflict is among the most important studied constructs in the conflicting relationships between work and family (Eby, Casper, Lockwood, Bordeaux & Brinley, 2005, Byron, 2005), and it occurs when there is incompatibility in participating between work role and family role in certain aspects. Greenhaus and Singh (2003) define work-family conflict as the simultaneous pressures of work and life territories that are mutually incompatible, and in some ways for example satisfying the needs of a role makes it difficult to satisfy

the needs of another role. Conflict between work and family roles is in two directions: the interference of work role with family role (WIF) and the interference of family role with work role (FIW) (Frone, 2003). An investigation in American Psychological Association (2007) suggests that about half of the employees experience the interference of work roles with family roles, and about 43% of the staff experience interference of family role with work roles.

With the daily increase of complexity in current societies, the mission of organizations in meeting the expectations of societies is more sensitive and certainly more important. There is consensus among the experts and pundits about the major role of human being as key director of the organization and this means employees are the most valuable capital of organization, and their individual performance affect the performance of the entire organization (Mehmanfar, 2005). Therefore, for improving the performance of the organization, deeper attention should be given to our employees and the factors affecting their performance.

Of course, the main issue on stress is that these are not external events and occurances which create this phenomenon but it is our perception about the events that led to the adoption of the events as a source of psychological stress (Ellis et al., 1980; quoted by Johari, 2013). Thus, at present time, most of the theories like French and Kahn's model of Michigan (1962) or Transactional theories insist that in the study of stress, the individual's type of perception should be investigated, and in other words, the role of individual differences in perception of the factors related to Stress should also be investigated (French, Caplan & Harrison, 1982). So, the permanent current theories believe that instead of measuring general stress, perceived stress should be individually evaluated. Perceived mental stress means the nature of stress and

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suffering experienced in an individual's life from his point of view (Cohen et al., 1983; cited by Shokuhi Amirabadi, Khalaatbari and Rezabakhsh, 2010).

On the other hand, though according to the researchers, there are different ways for effective controlling of stress in the workplace, but it is believed that exercise and physical activity is an excellent mechanism for controlling stress and should not be ignored (Beyrouti & Jaber, 2011). As a result, many organizations support home exercise program, with the hope of reducing employees stress. In fact, physical exercise has been identified as the most effective intervention related to work stress (Blaroza and Chen, 1997; quoted by Moore, 2010). For example Ritvanen, Louhevaara, Helin, Halonen and Hanninen (2007) studied the effects of aerobic fitness on physiological stress responses of 26 subjects during working hours and showed that high levels of physical fitness may reduce muscle tension. In addition, the expansion and contraction of the muscles of the neck, arms, shoulders, back, fingers and the middle part of the body, reduces the likelihood that the muscles are under pressure and the pressure produces the same symptoms. Finally, this research represented some effective impacts of physical exercise like reducing stress and improving well-being (Ritvanen et al, 2007).

Despite the above evidence on the efficient role of exercise on athlete employees' stress and despite the testimony of various research results into better condition of athlete employees than non-athletes in terms of health and well-being and their related factors (such as Gomez and Mauricio, 2013; Pedersen, 2013; Dezhahang, Hemati afifi and Nory nejad, 2014), few studies exist which indicate the cause and mechanism of these beneficial effects on athletes. Thus, the current research seeks effective

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factors and psychological changes that occur in athletic individuals and what causes superiority in them.

Thus, the present study has been designed in line with this goal and is determined to determine which psychological factors can be indicative of desirable influence of exercise on staff's stress. Studying previous research in this area, it should be noted that one of the important effective components of psychological effect of exercise on people is the change in their perceptions and cognitive aspects (Thøgersen-Ntoumani, Fox & Ntoumanis, 2005). Perceptions of self in individual have many different spheres in life such as work, family, spirituality, society and body (Marsh, 1997). Among these perceptions, physical perceptions or the concept of physical self have particular importance, and the most permanent aspects of physical perceptions which exercise has impact on and being improved by exercise are the dimensions of physical self-worth and physical attractiveness (Thøgersen-Ntoumani et al., 2005), and these dimensions are correlated with psychological well-being indicators such as positive effect and emotional adaptability (Van de Valiet, Knapen, Onghena, Fox, David, Morres et al., 2002).

Thus, it can be assumed that one of the major psychological factors of athlete staff that influences and improves perceived stress is enhancement of physical perceptions like physical self-worth and body attractiveness (first hypothesis). Of course, there are evidence which show that physical perceptions of people are strong predictors of effectual precedents of existent conflicts between their work and family such as work-family conflict and family-work conflict (Kulesz, 2013; Clayton, Thomas, Singh & Winkel, 2014; Faurote, 2014), and on the other hand, cited conflict factors have significant relation with employees' stress (Lachowska, 2014; Toga, Binqela and Mjoli, 2014; Oreizi

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Samani, Dibaji & Sadeghi, 2011). Therefore, the second hypothesis of this study is that physical perceptions of athletic staff affect the factors of the work-family conflict construct including work to family conflict and family to work conflict, and ultimately improves their perceived stress.

In general, the main objective of this study is to examine a model of the direct and indirect (through mediation of work-family conflict's aspects) effects of athlete staff's physical perceptions on their perceived stress (as a latent variable). The hypothetical model of study is presented in Figure 1:

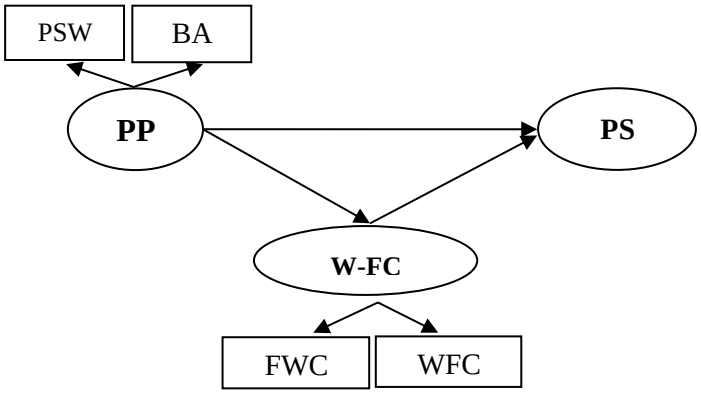


Figure 1. The proposed model of the study (*Notes:* PSW: Physical self-worth, BA: Body attractiveness, PP: Physical Perceptions, W-FC: Work-family conflict, WFC: Work to family conflict, FWC: Family to work conflict, PSS: Perceived Stress)

It should be noted that according to studies by current researchers, this is the first time the provided model in this research will be used, and most of these studies are correlational or comparative (Allen & Armstrong, 2006; Grace, Williams, Stewart & Franche, 2006) and less related to athlete employees (Thøgersen-Ntoumani et al., 2005).

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Method

The design of this research is correlational and utilizes structural equation modeling (SEM) approach.

In the research, statistical society covered all working employees in Gas Company of Tehran (N: 1000). On the other hand, athlete employees means people who at least: have exercised for 6 months, have regular exercise program and have moderate to high interest in its continuity. This definition of athletic staff is in accord with the people who are located in action, maintenance and termination stages of Prochska and Velicer transtheorical model of exercise adherence (1997). Of course, according to the recommendation of some British researchers (Deliotte, 2007), besides the aforementioned measures, persons selected as athlete are those who exercise at least twice a week for 150 minutes. A short survey was designed as "sport background of employees" by the present authors in which the above-mentioned measures in individuals was analyzed, and persons that reported equal or high levels of these standards, were selected as athlete. According to lack of the statistics about the number of athletes in the company based on these conditions (and only the availableness of whole number of company's employees), the least amount of sample was 181 persons and by analyzing the least sample according to 1000 persons in Kerjesy and Moregan diagram and for guarantying access to sufficient amount of athlete staff, the surveys were distributed at least among 400 workers in order to achieve at least 181 persons of athlete employees. Therefore, after distribution of 400 questionnaires among employees, and with performed screening, it was discovered that 187 persons of these employees were athlete and their data were applicable for model analysis.

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Instruments

Physical Perceptions

For assessing physical perceptions, the subscales of physical self-worth and body attractiveness of 25-items inventory of physical self (Ninot, Delignie`res & Fortes, 2000) were used which contained 5 and 3 Likert-scale questions, respectively. This scale is a short French version of physical self, and its original form is 30 parts (Fox & Cobin, 1989), which is in English. In various studies, the reliability of these subscales have been analyzed in this survey by using Cronbach alpha approach, and about .76 to .90 was achieved with its validity evaluated as acceptable by Factor analysis method (Stephan, Bilard, Ninot & Delignie`res, 2003; Stephan & Maı¨ano. 2007).

Work-Family Conflict Scale

18-point scale multi-dimensional measures of work-family conflict scale of Carlson, Kacmar and Williams (2000) was utilized for evaluation of work to family conflict and family to work conflict. In the study of Watai, Nishikido & Murashima (2008), the validity and reliability of the subscales of this scale was reported to be from .77 - .92. On the other hand, Moteshareiee (2010) in his study on the nurses of Shiraz's hospitals calculated the factor validity for the items of the relevant subscales to be from .19 to .90, and its reliability was reported as .91 using Cronbach alpha coefficient method and .92 using split-half approach.

Perceived Stress Scale

This variable (which has been considered as the central concept) was assessed by Cohen, Kamarck and Mermelstein (1983) perceived stress scale (PSS). Its questions were posed so

that the respondents expressed their opinion about the uncontrollable things, unpredictability and excruciating dispositions of their life. Its original scale consisted of 14 questions, but at the same time, there were also 4 questions and 10 questions versions of it. Yazdi et al. (1999) quoted by Ghafuri, Khaksar & Naami (2010) during a research about this scale reported the Cronbach alpha reliability coefficient to be equal to .81.

During required negotiations and correspondences with sports and research experts of the current company, some comments were presented about the topic and research scope, and the extent of the problem was discussed. After determining the location of data gathered from the sample in this study, and consultation and coordination with related experts, the questionnaires together with their instructions and the phone number of the executer was distributed among the sample individuals. The data was analyzed using SPSS-19 and AMOS-20.

Results

Before the main analysis, several initial analysis was conducted to gain preliminary insight into research data and the mean, standard deviation and simple relationships between four variables were studied.

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Table 1

The Means, Standard Deviations and Correlation Matrix between the Variables of the Model

		M	SE	PSW	BA	WFC	FWC
1	**PSW**	19.72	3.5				
2	**BA**	11.43	1.9	**.36			
3	**WFC**	29.43	6.9	*.18	**.23		
4	**FWC**	39.40	5.4	**.19	*.14	**.64	
5	**PS**	47.82	5.3	**-.29	**-.28	**.41	**.38

******α <.01, *****α <.05 (*Notes:* PSW: Physical self-worth, BA: Body attractiveness, WFC: Work to family conflict, FWC: Family to work conflict, PS: Perceived Stress)

The contents of Table 1 display the means, standard deviations and simple correlations among research variables and most of these relationships are significant in .01 level. These twofold correlations among the variables in the study provide overall insight for this study.

Evaluation of the Current Model Hypothesis

Before examining the structural coefficients, the proposed model fitness was analyzed through the data. Although the amounts of most of fitness indices were indicative of suitable fitness of the proposed model, but the rate of the root mean square error of approximation (RMSEA) indicator showed the need for improvement of the model. So, the next step was the promotion of the proposed model fitness through the elimination of non-significant pathways (related to some items of perceived stress construct) with the recommendation of the AMOS-20 software. Of course, the main point in structural equation modeling approach is that the model fitness indices are related to testing the validity of the applied scales (assessment instruments) besides examining structural relationships among variables of the model

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and as a result, the requirements of structural equation modeling in AMOS-20 software necessitates that that for increasing the statistical power in accurate estimation of parameters, some of the items with poor loadings are removed and the remaining items in the model have proper prediction and content validities in explaining the latent construct (perceived stress) of the model (Moore, Halle, Vandivere & Marina, 2002, quoted by Beshlideh, 2014). After removal of these non-significant paths, the RMSEA index of modified model was improved and reached significant level (.07). The results of the model fitness are presented in Table 2 and in addition, the final model of the study with its standardized coefficients pathways is illustrated in Figure 2:

Table 2

Fitness Indices of the Proposed and Final Modified Models

Fitness Indices	χ^2	Df	χ^2/df	GFI	IFI	TLI	CFI	NFI	RMSEA
Prpopsed Model	388.95	132	2.94	.78	.77	.70	.74	.66	.10
Final Model	126.35	62	2.03	.90	.91	.88	.91	.84	.07

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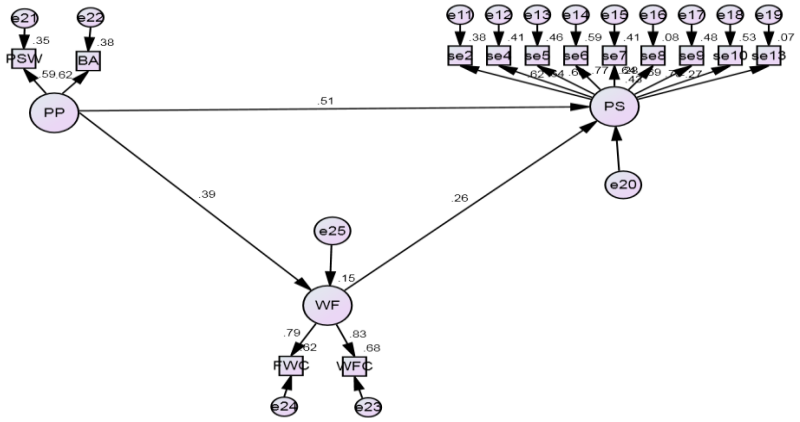


Figure 2. The final model of the study and direct standardized coefficients of the directions

Path coefficients in Figure 2 is a demonstration of the significant impacts of all direct directions and therefore, confirming the first hypothesis of the study. The results of the mediating relationship (by using the bootstrap method) are shown in Table 3.

Table 3

The Results of Bootstrap Approach for the Mediating Path of the Study's Model

Path	Data	Boot	Bias	SE	Sig= %95	
					Lower limit	Upper limit
Indirect path through Work-family conflict	-.107	-.109	.0019	.0437	-.0302	-.1997

The confidence interval for the path set forth in Table 3 indicates that zero number is not located at this distance, in relation to the

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indirect path, and finally confirming the second hypothesis. The confidence level for this interval is 95% and the number of bootstrap resampling is 5000.

Finally, the results of direct, indirect and total coefficients of the model (from AMOS software) are displayed in Table 4:

Table 4

Direct, Indirect and Total Coefficients of the Model

Effect	Path	B	B	$\alpha < .05$
Direct	PP to W-FC	-1.07	-.39	.004
	W-FC to PS	.02	.26	.046
	PP to PS	-.12	-.51	.0001
Indirect	PP to PS through F-WC	-.02	-.10	.01
Total	PP to W-FC	-1.07	-.39	.004
	W-FC to PS	.02	.26	.046
	PP to PS	-.14	-.61	.0001

Discussion

As cited before, the aim of this research was to evaluate a model of direct and indirect (with the mediation of work-family conflict construct) effects of athlete employees physical perceptions on their perceived stress. The findings of this study confirm the first hypothesis about the direct impact of physical perceptions (physical self-worth and physical attractiveness) on perceived stress of athletic staff and is harmonious with some studies like Son Strom and Potts (1996), Van de Valiet et al. (2002) , Mc

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Auley, Elavsky, Motl, Konopack, Hu and Marquez (2005) and Kosmidou (2013). In explaining the reason for this agreement it should be acknowledged that what is likely very important for most athletes (consciously and unconsciously) at the beginning of exercise and its maintenance is achieving a robust and healthy body in the long run (Roland, 2001; Strab, 2002, quoting Elahi, Fathi Ashtiani and Bigdeli, 2012). This means the long-term value of exercise for athletes is mainly in the development of health and physical fitness which would prevent infection from many probable diseases and physical-mental pains in the future. Thus, the nature of the positive effects of exercise for the athletic staff's bodies can cause invaluable views and perceptions about their self and these perceptions and views can also somewhat lead to improved psychological well-being aspects such as perceived stress, directly.

On the other hand, the second hypothesis of the study on the role of intermediate role of work-family conflict (latent variable) in the relationship between employees' physical perceptions and perceived mental stress has been confirmed. Unfortunately, according to the evidence available to the current authors, there are no studies whose finding could be contrasted with those of the present research. Anyway, in justifying these results, it can be said that one of the powerful predictors of staff work-family conflict that has a significant relationship with perceptual aspects (Zadra & Clore, 2011) is negative affectivity (Mihelič & Tekavčič, 2014) and with increasing negative emotions in employees, their work-family contradictions would also increase. Thus, regarding that physical perceptions are an important part of people's perceptions (Fox, 1997; quoted by Dionigi & Cannon, 2009) and, as mentioned above, considering the powerful influence of the perceptions on work-family conflict and the

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meaningful impact of this conflict on perceived stress, it can be claimed that people who exercise, in fact, strengthen nice emotions and feelings in themselves, at first, which leads to the formation of valuable insights about their body, and these views can increase their ability to deal with existing conflicts in work and family relations over time, and with continuity in physical exercise the consequence is that people deal with their perceived stress and aspects related to it more effectively and in other words, they can manage their stress in the best way.

In short, the findings showed that not only is the direct impact of athlete employee's physical perceptions on perceived stress true, but also it can lead to improvement of the work-family conflict's construct and its components and improve their perceived stress, ultimately. As a result, this research model is approved and can be used in the interventions related to improvement of staff's psychological stress.

Limitations

At the end, some of the limitations of the current study are presented:

1. Even though this study has been done on an appropriate sample size of the staff at a great industrial company, precaution should be taken in generalizing the results to the employees of other companies and organizations, and it seems better that such research projects should be performed in national, international and wider research projects.

2. Because most employees of the organization were men, thus we had very limited access to women (and especially athlete women) employees.

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Recommendations

1. In further studies it would be better to study the role of exercise and its values on a wide range of psychological variables affecting the productivity of organizations and to study the role of useful exercise programs in improving employees' productivity so that an applied and comprehensive approach of applying appropriate exercise programs into organizations can eventually be received.

2. Although easy access to exercise facilities may be useful in persuasion of employees to participate in exercise programs, but encouraging employees to participate in regular physical activity, is challenging (Beyrouti & Jaber, 2011). So, it is recommended that if employers want to increase fitness participation, they should consider providing additional incentives to encourage the use of physical training and fitness programs.

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