



Revista Latinoamericana de Psicología

www.elsevier.es/rp



ORIGINAL ARTICLE

Social support, physical exercise and life satisfaction in women



Juan Antonio Moreno-Murcia, Noelia Belando, Elisa Huéscar*, María Dolores Torres

Miguel Hernández University of Elche, Spain

Received 1 October 2015; accepted 9 August 2016

Available online 2 August 2017

KEYWORDS

Gender;
Physical exercise;
Autonomy support;
Basic psychological needs;
Motivation

Abstract This study examined the predictive relationship between perceived autonomy support from the family and fitness instructors, psychological needs, intrinsic motivation, health goal, regular physical activity and life satisfaction in a group of women. 355 physically active women aged 18–82 ($M = 35.30$, $SD = 12.20$) participated in the study. The results of the structural equation model showed that the results of the analysis of the structural equations model established a positive relation between perceived autonomy support and psychological needs, which related positively to intrinsic motivation. Likewise, intrinsic motivation related positively to health goal, which in turn related positively to regular physical activity, and finally, physical education showed a positive relation with life satisfaction. The results of this study show the need for social-cognitive physical interventions in order to maximize the benefits of physical exercise among women.

© 2017 Fundación Universitaria Konrad Lorenz. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

PALABRAS CLAVE

Género;
Actividad física;
Apoyo a la autonomía;
Necesidades psicológicas básicas;
Motivación

Apoyo social, ejercicio físico y satisfacción con la vida en mujeres

Resumen Este estudio analizó la relación predictiva entre la percepción de apoyo a la autonomía de la familia y del técnico deportivo, los mediadores psicológicos, la motivación intrínseca, la salud, la práctica de actividad física habitual y la satisfacción con la vida en un grupo de mujeres. Participaron 355 practicantes de ejercicio físico con edades comprendidas entre 18 y 82 años ($M = 35.30$, $SD = 12.20$). Los resultados del análisis del modelo de ecuaciones estructurales mostraron que la percepción de apoyo a la autonomía predecía positivamente los mediadores psicológicos, que a su vez, fueron predictores positivos de la motivación intrínseca.

* Corresponding author.

E-mail address: ehuescar@umh.es (E. Huéscar).

La motivación intrínseca predijo positivamente la salud –que pronosticó positivamente la práctica de actividad física habitual– la cual predijo positivamente la satisfacción con la vida. Estos resultados revelan la necesidad de intervenir sobre el contexto social de la mujer practicante, en pro de maximizar los beneficios de la práctica de la actividad físico-deportiva.

© 2017 Fundación Universitaria Konrad Lorenz. Publicado por Elsevier España, S.L.U. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

For over a decade, studies have indicated that self-reported physical exercise combined with satisfactory and stimulating experiences within the family circle are recommendable behaviors for an active and healthy lifestyle (Lee et al., 2012; Ryan & Deci, 2000; Silva, Lott, Mota, & Welk, 2014; Vallerand & Rousseau, 2001). This is reflected in the guaranteed physical and psychosocial benefits that self-reported physical exercise entails (Wójcicki et al., 2013), as well as the positive relation between physical exercise and greater life satisfaction (Hagger & Chatzisarantis, 2007; Moraes, Corte-Real, Dias, & Fonseca, 2009). However, it has been pointed out in several studies that the level of exercise for women is currently lower than it is for men (Álvarez, 1992; García & Llopis, 2011), and that the proportion of women who manage to integrate the habit of exercise in their life style (Kassavou, Turner, & French, 2013) as well as their perceived sports identity (Peiró, Valencia, Fos, & Devís, 2016) is also very low. This being the case, it is important to be aware of the amount of leisure time devoted to doing physical activity, and its role in improving motivation and increasing the feeling of competence in women. For these reasons, this study analyzed the possible influence of autonomy support from the family and fitness instructor with respect to basic psychological needs, intrinsic motivation and positive consequences on the physical and psychological health of women.

Social support, intrinsic motivation and positive consequences

The self-determination theory (Deci & Ryan, 1985) establishes that different types of motivation (on a continuum that goes from more to less self-determination) could be determined by social factors like motivational climate. Different studies (Kinnaick, Thøgersen-Ntoumani, & Duda, 2014; Ntoumanis, Pensgaard, Martin, & Pipe, 2004; Vallerand, 2007) have observed that if a task is developed in a motivational climate, it could satisfy the basic psychological needs of autonomy (having the freedom to choose), competence (feeling effective) and relatedness, which are in turn associated to more self-determined forms of motivation. Therefore, through a motivational climate generated by social context (fitness instructor, family, peers, the media), women would be able to experience intrinsic motivation in physical exercise. This self-determined motivation could lead to positive consequences like better psychological health (Gunnell, Crocker, Mack, Wilson, & Zumbo, 2014), the habit of doing sport (Ryan, Federick, Lepes, Rubio,

& Sheldom, 1997) and greater life satisfaction (Moraes et al., 2009). Added to this, having a high level of internalized motivation would favor the creation and maintenance of more positive behavioral patterns (Ng et al., 2012; Villadrich, Torregrosa, & Cruz, 2011). With regard to health, the recent Goal Contents Theory (GCT; Ryan, Williams, Patrick, & Deci, 2009; Vansteenkiste, Niemiec, & Soenens, 2010) states that goals can be differentiated between extrinsic and intrinsic, and this line has created a questionnaire to measure them (Sebire, Standage, & Vansteenkiste, 2008). Interestingly, intrinsic goals (e.g. health management) are positively associated with the satisfaction of basic psychological needs and welfare (Sebire, Standage, & Vansteenkiste, 2009, 2011).

The general social context – mediated by gender relations and especially by figures of authority (fitness instructor) – also plays a fundamental role in satisfying or frustrating basic psychological needs – regarded as the psychological mediators between social factors and motivation. In this sense, based on the self-determined theory, Vallerand (1997, 2001) developed the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM), which has marked a step forward in the study of motivation. This model relates different constructs and suggests that motivation is determined by social factors, such as the motivational climate transmitted by trainers, fitness instructors or teachers. It also proposes that each level of motivation can influence the closest level below, which means that global motivation can influence contextual motivation, and consequently contextual motivation can influence situational motivation. This means that the global and contextual motivation of women who do physical activity could be conditioned through the accumulation of positive situations (situational motivation), fostered by the family and fitness instructor through a motivational climate of autonomy support. For example, families' positive opinion about women doing physical exercise and the positive emotion that fitness instructors transmit in each session could make women feel valued and respected within their social context. In this vein, different studies (Castillo, Molina-García, & Álvarez, 2013) suggest that intrinsic motivation, perceived competence, autonomy, self-esteem and life satisfaction are indicators of positive psychological states which improve people's capacity to be happy. That is to say, these factors influence the acquisition of a balanced mental health in women, which can be defined as their having no psychological disorders, and a greater capacity to be satisfied with life.

At this point, it would be interesting to know what factors contribute for women to overcome these static intentions

and move toward the action of the practice of physical exercise and whether – despite conflicts – women can maintain it over time. Recently, other theories are applied to health complementing TAD, which make contributions to understand motivation and health behavior in relation to physical exercise. Thus, the Health Action Process Approach (HAPA, Schwarzer, 2008) points out two stages to explain the way from the intention to conduct health: the motivational stage – the intention that women have to practice physical and sport activities (including outcome expectations and then self-efficacy) and the volitional stage, where women would plan behavior, act and maintain a healthy behavior. Based on the HAPA with 697 university students aged 16–48 years, Reyes et al. (2015) have found a sequence that starts in the intention level, leads to action planning and coping planning, and affects exercise maintenance via action control. Action control is a self-regulatory strategy, and the last step in the chain. It is also the most proximal effort to maintain an on-going exercise behavior. Based on this framework (HAPA, Schwarzer, 2008), women should be aware of their standards, self monitoring and effort (Sniehotta, Scholz, & Schwarzer, 2005) by the relevance of action control for health behavior change (Schwarzer, Antoniuk, & Gholami, 2014). Perhaps it is in this last phase of maintenance of behavior, where social supports would be participating, contributing to the wellbeing of women, prevention of relapse and facilitating their life satisfaction.

Life satisfaction and physical exercise in women

The desire to relate to the social environment has been associated with an expression of a higher level of life satisfaction, in contrast to people who do not have this need (Rojas Marcos, 2005). This behavior has been studied in adolescents (Moreno, Estevez, Murgui, & Musitu, 2009), where it was found that the need to relate to others is linked to students' perception of being effective in their social environment, learning to be responsible for themselves and for others, and incorporating the strategies that enable them to exercise control over their lives. From this perspective, life satisfaction also seems to be linked to social relations in women, and presents a positive relation with self-esteem and with physical activity (Maher, Pincus, Ram, & Conroy, 2015). Authors such as Arthaud-Day, Rode, Mooney, and Nera (2005) establish that life satisfaction is one of three components of the subjective perception of well-being, the other two being positive and negative experiences. Thus, the life satisfaction construct is understood as an individual's global evaluation of their life, whereby they value its positive and negative aspects and compare them to the model of life they have established for themselves (Pavot, Diener, Colvin, & Sandvik, 1991).

Similarly, doing physical exercise has been linked to greater life satisfaction in adolescents (Moraes et al., 2009). In this sense, Escartí et al. (2004) indicate that increased participation in physical exercise leads to a feeling of competence and determines an improvement in motivation. It has also been made evident that having greater autonomy when doing exercise favors intrinsic motivation through the actual satisfaction gained from it (Ryan & Deci, 2006).

Nevertheless, among the studies reviewed, we still cannot identify clear relations between doing physical exercise and life satisfaction.

In line with these theoretical considerations, this study aims to analyze the predictive relationships between perceived autonomy support from the family and fitness instructors, psychological needs, intrinsic motivation, health goal, doing regular physical exercise and satisfaction with life in physically active women. In previous research, it has emerged that all physical activities and people's social interactions in physical and mental health are important (Wójcicki et al., 2013). García, Matute, Tifner, Gallizo, and Gil-Lacruz (2007) found a close relation between physical exercise and health, and demonstrated that their general health index was more positive in people who did some sort of physical activity than in people who were more sedentary.

So, it was hypothesized that perceived autonomy support from the family and fitness instructors would positively predict psychological needs, which would in turn predict intrinsic motivation. This in turn would predict health, which would lead to doing more regular physical activity and greater life satisfaction.

Method

Participants

Sampling criteria consisted of selecting women who had been attending supervised classes for more than six months. They were selected from eleven sports centers in different Spanish cities. The initial sample included 386 participants, however, due to incorrect questionnaire completion, the final sample consisted of 355 women who do physical exercise (e.g. aerobics, pilates, spinning, weight training and swimming) aged between 18 and 82 ($M = 35.30$; $SD = 12.20$). 77.4% did physical exercise 2–3 days a week and 22.6% did physical activity more than 3 days a week.

Measures

Autonomy support from the family and fitness instructors

To measure perceived autonomy support from the participant's family and trainers, we used The Perceived Autonomy Support Scale for Exercise Settings (PASSSES) by Hagger et al. (2007), validated in Spanish by Moreno, Parra, and González-Cutre (2008). The scale consisted of 11 items grouped into a single factor: autonomy support from the family with six items (e.g. "My family understands why I've decided to do physical activity"), preceded by "with respect to doing physical exercise...". or autonomy support from the trainer with five items (e.g. "The trainer understands why I've decided to do physical exercise"), preceded by "When I do supervised physical exercise...". Responses are given on a Likert scale from 1 (*totally disagree*) to 7 (*totally agree*). Cronbach's alpha values were .94 and .96, respectively.

Psychological needs

To measure psychological needs satisfaction, we used *The Psychological Need Satisfaction in Exercise Scale* (PNSE) by Wilson, Rogers, Rodgers, and Wild (2006), validated for

the Spanish context by [Moreno-Murcia, Marzo, Martínez-Galindo, and Conte \(2011\)](#). The scale was made up of 18 items referring to competence (e.g. "I am confident about doing the most challenging exercises"), to autonomy (e.g. "I believe I can make decisions about my training"), and to relatedness (e.g. "I feel close to my training partners because they accept me for who I am"). Responses were given on a Likert scale from 1 (*false*) to 6 (*true*), beginning with the item stem, "In my training...". Internal consistency for each factor was .90, .85, and .86, respectively. In this study, the three dimensions were included in a single dimension with an internal consistency of .89, as in previous studies (see [Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011](#); [Torregrosa, Belando, & Moreno-Murcia, 2014](#)).

Intrinsic motivation

To measure intrinsic motivation, we used the intrinsic subscale from the *Behavioral Regulation in Sport Questionnaire* (BRSQ) by [Lonsdale, Hodge, and Rose \(2008\)](#) validated for the Spanish context by [Moreno-Murcia et al. \(2011\)](#) and [Viladrich et al. \(2011\)](#). The subscale consisted of four items (e.g. "Because I enjoy it") preceded by the phrase "I do this sport because...". The responses were given on a Likert scale from 1 (*Not true at all*) to 7 (*Very true*). Internal consistency was .90.

Health goal

To measure the health goal, we used the health management factor from the *Goal Content for Exercise Questionnaire* (GCEQ) by [Sebire et al. \(2008\)](#), recently validated in Spanish by [Moreno-Murcia, Marcos, and Huéscar \(2016\)](#). The scale consisted of four items that measured doing physical activity as a health goal (e.g. "In order to be more resistant to illness"). The items were answered on a Likert scale from 1 (*Totally disagree*) to 7 (*Totally agree*), preceded by the item stem "I've participated in these activities...". Internal consistency was .84.

Physical exercise

We used the Spanish version ([Sarria et al., 1987](#)) of the *Habitual Physical Activity Questionnaire* by [Baecke, Burema, and Frijters \(1982\)](#) to measure participants' habitual physical activity. This questionnaire gives three habitual physical activity scores from the last 12 months: occupational physical activities, physical exercise in leisure time (PEL) and leisure and locomotion physical activities (LLA). In this study, the sum of the PEL score and the LLA score gave the total score for physical activity (TS). The PEL score was calculated based on four questions. The first question referred to the type of sport or sports, weekly frequency and months of physical activity in a year. The score for the first question was calculated by applying the following formula: $\text{Modality 1 (Intensity} \times \text{Time} \times \text{Proportion}) + \text{Modality 2 (Intensity} \times \text{Time} \times \text{Proportion)}$. To calculate this formula, different coefficients were assigned according to the sport, hours a week and months a year of physical activity (see [Ainsworth et al., 2000](#)). The other three questions evaluated the level of physical exercise in leisure time (e.g. "During leisure time I do sport") on a Likert scale from 1 (*Never*) to 5 (*Very often*). To calculate the PEL score, the first

question was converted into values of 1–5 and the average of the four questions was calculated. To calculate the LLA, the average of the other four questions which evaluate the level of leisure and locomotion physical activities was calculated (e.g. "I walk during my leisure time") on a Likert scale of 1 (*Never*) to 5 (*Very often*). To calculate the final result, the score for the first question was converted into values from 1 to 5 and the average for the four questions was calculated. Internal consistency was .71.

Life satisfaction

To measure life satisfaction, we used the *Satisfaction with Life Scale* (ESDV-5) by [Vallerand, Blais, Brière, and Pelletier \(1989\)](#), validated for the Spanish context ([Atienza, Pons, Balaguer, & García-Merita, 2000](#); [Atienza, Balaguer, & García-Merita, 2003](#)). It consisted of five items grouped into a single factor (e.g. "In general, my life corresponds with my ideals"). Beginning with the item stem "Satisfaction with your life...". Responses were given on a Likert scale from 1 (*Totally disagree*) to 7 (*Totally agree*). Internal consistency was .83.

Procedure

Participants were selected from sports centers by means of random cluster sampling ([Azorín & Sánchez Crespo, 1986](#)). First, coordinators from Spanish sports centers were contacted to inform them about the aim of the research and to ask for their collaboration. The participants were informed a week before the questionnaires were to be completed. Before attending physical exercise sessions, all the participants were given an envelope at the entrance hall of the center. This envelope contained six questionnaires in the presence of the lead researcher, who informed them about the study and answered any queries that arose. It took the participants approximately 15 min to complete the questionnaires. Participation was voluntary and the ethical principles of anonymity and confidentiality of personal data were met. There were no rejected questionnaires, and data were collected in March 2013.

Data analysis

Descriptive statistics were calculated for all the target variables (mean and standard deviations). Internal consistency for each factor was analyzed using Cronbach's alpha and bivariate correlations. Likewise, a structural equation model was performed to analyze the hypothesized relations between the variables. The two-step approach proposed by [Anderson and Gerbing \(1988\)](#) was used: first, a measurement model was calculated in order to give construct validity to the dimension based on the fourteen measures observed and the seven latent constructs which freely correlated. Secondly, a structural regression model was formulated which analyzed the relationships between perceived autonomy support from the family and fitness instructor, psychological needs, intrinsic motivation, health goal, self-reported physical exercise and life satisfaction. A series of fit coefficients were considered to evaluate the measure models' goodness of fit with the empirical data. Therefore, based on the studies by different authors ([Bentler, 1990](#); [Bollen & Long, 1993](#);

McDonald & Marsh, 1990), the fit indices which were considered to evaluate the structural model were: χ^2 , $\chi^2/\text{d.f.}$, RMSEA (Root Mean Square Error of Approximation), RMSR (Root Mean Square Residual) and the incremental indices (CFI, IFI and TLI). These goodness of fit indices are considered acceptable when the $\chi^2/\text{d.f.}$ is lower than 5, the incremental indices (CFI, IFI and TLI) are higher than .90 and the error indices (RMSEA and RMSR) are lower than .08 (Hu & Bentler, 1999). The statistical software SPSS 20.0 and AMOS 20.0 was used for the data analysis of fitness instructors, psychological needs and self-reported physical activity.

Results

Descriptive analysis and bivariate correlations

Perceived autonomy support from the family showed a higher score than perceived autonomy support from fitness instructors (see Table 1). In the correlation analysis, it was noted that all the variables correlated positively with one another, except for perceived autonomy support from fitness instructors and self-reported physical exercise, which showed no correlation (Table 1).

Analysis of the structural equation model

First, a measurement model (i.e. confirmatory factorial analysis) was calculated to be able to examine construct validity. The model was reduced in order to maintain some reasonable degrees of freedom (Cecchini, González, & Montero, 2007; Ntoumanis, 2001). Thus, the items contained in each of the dimensions for the different scales were divided homogeneously into two groups (Marsh, Richards, Johnson, Roche, & Tremayne, 1994). The estimation method for maximum verisimilitude together with the *bootstrapping* procedure were used since the result for Mardia's multivariate coefficient was 26.88, which indicated lack of multivariate normality. The number of resampling used was 500. The indices were adequate: χ^2 (62, $N=355$) = 128.83, $p = .001$; $\chi^2/\text{d.f.} = 2.26$; CFI = .97; NFI = .95; TLI = .97; IFI = .97; RMSEA = .06. RMSEA confidence intervals ranged between .61 and .77.

The second analysis consisted of simultaneously testing the structural model and the measurement model, in order to focus on the conceptual interactions between the latent factors: perceived autonomy support from the family and fitness instructor, psychological needs, intrinsic motivation, health goal, self-reported physical exercise and life satisfaction. The results of this model showed appropriate fit indices: χ^2 (48, $N=355$) = 242.38, $p = .001$; $\chi^2/\text{d.f.} = 3.41$; CFI = .93; NFI = .91; TLI = .92; IFI = .92; RMSEA = .08. The results of the analysis of the structural equations model established a positive relation between perceived autonomy support from the family and fitness instructors and psychological needs, which related positively to intrinsic motivation. Likewise, intrinsic motivation related positively to health goal, which in turn related positively to regular physical activity, and finally, physical education showed a positive relation with life satisfaction. The explained variances

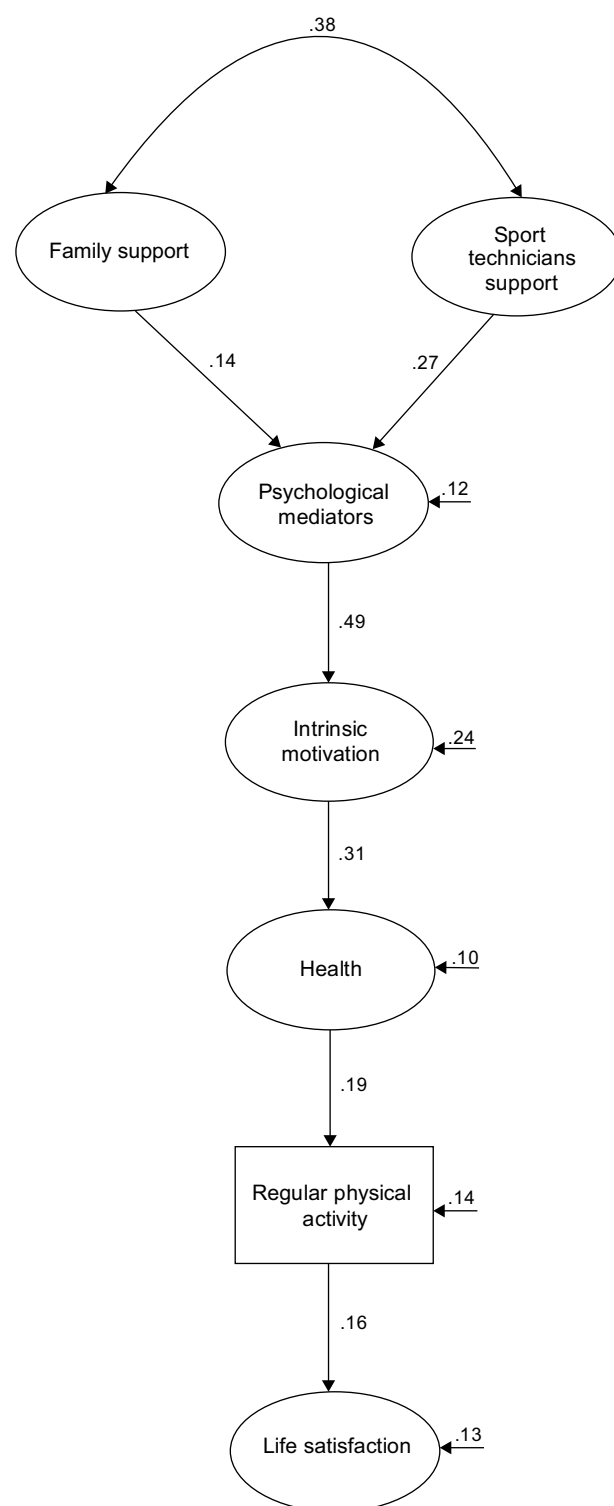


Figure 1 Structural equation model (SEM) which shows the relations between autonomy support from the family and sports technicians, psychological mediators, intrinsic motivation, health, doing regular physical activity and life satisfaction. All the regression weights are standardized and statistically significant ($p < .05$).

Table 1 Descriptive statistics and correlations of all the variables.

Variables	M	SD	α	R	1	2	3	4	5	6	7
Family support	5.56	1.13	.94	1-7	-	.38**	.22**	.11*	.23**	.14**	.31**
Fitness instructor support	5.39	1.15	.96	1-7	-	-	.29**	.15**	.21**	.10	.14*
Psychological needs	4.29	.81	.89	1-6	-	-	-	.34**	.25**	.22**	.27**
Intrinsic motivation	6.05	.97	.90	1-7	-	-	-	-	.23**	.31**	.24**
Health goal	5.83	.94	.84	1-7	-	-	-	-	-	.16**	.11*
Physical exercise	6.08	.96	.71	1-5	-	-	-	-	-	-	.15**
Life satisfaction	5.71	1.01	.83	1-7	-	-	-	-	-	-	-

Note: M = Mean; SD = Standard deviation; α = Cronbach's alpha; R = Range.

* $p < .05$.

** $p < .001$.

obtained were: 10% for health goal, 14% for self-reported physical exercise and 13% for life satisfaction (Fig. 1).

Discussion

The study of the influence of social support on women's motivation toward physical exercise is fundamental to find out more about their goals, the efforts they make to achieve them, and their persistence in reaching them (Iso-Ahola & St. Clair, 2000). Similarly, this study could be a key element in generating positive consequences in their lives. The authors of the self-determination theory argue that the perception of autonomy when doing physical activity favors intrinsic motivation because of the pleasure and enjoyment inherent in doing it (Gucciardi & Jackson, 2015).

This paper analyzed the predictive relationships between perceived autonomy support from the family and fitness instructor, psychological needs, intrinsic motivation, health goal, self-reported physical exercise and satisfaction with life. Autonomous support shown by the family and the fitness instructor could be decisive for enabling women to feel autonomous and competent, and to being well-adjusted to their environment (Deci & Ryan, 1987). Furthermore, by experiencing greater intrinsic motivation, women would be in a better position to be able to reconcile family and professional life with doing physical exercise, which in turn could result in greater satisfaction with life. The results supported the hypothesis that perceived autonomy support from the family and fitness instructor would positively predict psychological needs, and that they would in turn positively predict intrinsic motivation. In this vein, it has been pointed out in previous research (Deci & Ryan, 2000; Ryan & Deci, 2000; Vallerand, 2007), that the satisfaction of basic psychological needs is related to more self-determined types of motivation and could be a predisposing factor to accomplishing positive consequences from physical exercise, such as general well-being (Gagné, Ryan, & Bargmann, 2003; Standage & Treasure, 2002; Vierling, Standage, & Treasure, 2007). The results obtained correspond to other research in this area of study (Smith, Ntoumanis, & Duda, 2007), which indicates that a social environment that provides autonomous support for doing sports would strengthen the satisfaction of basic psychological needs of physically active women,

thereby contributing to their experiencing greater intrinsic motivation.

The results also showed a positive relation between intrinsic motivation and health goal, which positively predicted self-reported physical exercise, and consequently life satisfaction in women. In this same line, some studies (Kilpatrick, Hebert, & Jacobsen, 2002; Moreno, Gonzalez-Cutre, & Cervelló, 2008) show the need to develop self-determined motivation in women who do sports through a climate which provides autonomy for physical exercise, and where their personal development is valued, thus enabling them to achieve important benefits for their health and life in general. This is illustrated by Moraes et al. (2009), who found a positive relation between doing physical activity and greater life satisfaction. Along the same lines, Moreno-Murcia and Vera (2011) found that adolescent students' perception of greater self-esteem and enjoyment positively predicted life satisfaction. In sport, improvement in life satisfaction could be determined by sports results, and personal standards of improvement in this sport (Gaudreau & Antl, 2008).

The implications of doing physical exercise

To sum, the results obtained and the studies revised suggest that a climate which is intervened through a facilitating and participatory methodology could be instrumental in satisfying the basic psychological needs for greater intrinsic motivation. This could lead to improvement in women's health (i.e. physical and psycho-social well-being), their persistence in doing sports, and consequently greater life satisfaction. This intervention is based on decision making, being able to choose activities, interaction through positive feed-back, group discussions, initiative, concerns, and the emotional state of the women doing physical activity/sports (Moya, Sarabia, & Torres-Luque, 2016; Ruíz, Ruíz, De la Torre, La Torre, & Martínez, 2016; Vallerand, 2001). To achieve this, it is important to address the interests and reasons that motivate women to do physical exercise, thereby guaranteeing the satisfaction of their needs and their participation in physical activity, which will then lead to psychological and physical well-being. In this way, it would be possible to help women to reconcile family life,

work and time for doing sports, thereby favoring greater satisfaction with their lives.

Limitations and perspectives

This study has some limitations in its correlational design, as it does not allow for causal relationships to be established and the sample is specific to Spanish women who do sports. Furthermore, due to the problem of equivalent models arising from the structural equations technique (Hershberger, 2006), it can be assumed that the model established in this study would only be one of several possibilities. In addition, given the respective retrospective or cross-sectional nature of the studies, the results should be treated with caution. From the TAD, there could be processes of change in motivation frustration on the part of social agents' basic psychological needs which influence health behavior. A prospective design involving several points of measurement across time and an examination of social autonomy support behavior would strengthen the empirical support of the processes hypothesized about motivation in women. Finally, other socio-demographic variables might be influencing the results on satisfaction with life, and should be considered in future research.

Conclusion

The results found in relation to other studies reviewed show that autonomy support from family and fitness instructors contributes to satisfying basic psychological needs, which could mediate the relation between the social factors presented and greater intrinsic motivation in women. Experiencing greater intrinsic motivation could foster an interest for better health management in women, and would generate a habit of physical exercise, so they will feel more satisfied with life. These results show that there is a need in the social context surrounding women of being more aware of how important it is to integrate acknowledgment, companionship, and encouragement in the activities they participate in, which will lead them to feel satisfied with themselves and with their life. That is to say, women who do physical exercise should perceive that the social context values their psychological and physical health, and more importantly, that within this importance for maintaining and improving health, physical exercise has a role of paramount importance.

References

- Ainsworth, B. E., Haskell, W. L., Whitt, M. C., Irwin, M. L., Swartz, A. M., Strath, S. J., . . . & Leon, A. S. (2000). Compendium of physical activities: An update of activity codes and MET intensities. *Medicine and Science in Sports and Exercise*, 32(9), 498–516. <http://dx.doi.org/10.1097/00005768-200009001-00009>
- Álvarez, G. (1992). . pp. 25–29. *Situación de las niñas y jóvenes en el deporte de base. El ejercicio físico y la práctica deportiva de las mujeres* (Vol. 12) Consejo Superior de Deportes. Ministerios de Educación y Ciencia. Secretaría de Estado de Educación. Ministerio de Asuntos Sociales. Instituto de la Mujer. Serie Debate.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103, 411–423. <http://dx.doi.org/10.1037/0033-2909.103.3.411>
- Arthaud-Day, M. L., Rode, J. C., Mooney, C. H., & Near, J. P. (2005). The subjective well-being construct: A test of its convergent, discriminant, and factorial validity. *Social Indicators Research*, 74, 445–476.
- Atienza, F. L., Balaguer, I., & García-Merita, M. L. (2003). Satisfaction with life scale: Analysis of factorial invariance across sexes. *Personality and Individual Differences*, 35(6), 1255–1260. [http://dx.doi.org/10.1016/S0191-8869\(02\)00332-X](http://dx.doi.org/10.1016/S0191-8869(02)00332-X)
- Atienza, F. L., Pons, D., Balaguer, I., & García-Merita, M. (2000). Propiedades psicométricas de la escala de satisfacción con la vida en adolescentes [Psychometric properties of the scale of life satisfaction in adolescents]. *Psicothema*, 12(2), 314–319.
- Azorín, F., & Sánchez-Crespo, J. L. (1986). *Métodos y aplicaciones del muestreo [Sampling methods and applications]*. Madrid, España: Alianza Universidad.
- Baecke, J., Burema, J., & Frijters, J. (1982). A short questionnaire for the measurement of habitual physical activity in epidemiological studies. *American Journal of Clinical Nutrition*, 36(5), 936–942.
- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology*, 33, 75–102.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238–246.
- Bollen, D. A., & Long, J. S. (1993). *Testing structural equation models*. Newbury Park, CA: Sage.
- Castillo, I., Molina-García, J., & Álvarez, O. (2013). Resultados de un programa de ejercicio físico acuático sobre el bienestar psicológico en mujeres sedentarias. *Salud i Ciencia*, 19(8), 708–712.
- Cecchini, J. A., González, C., & Montero, J. (2007). Participación en el deporte y fairplay [Participation in sport and fair play]. *Psicothema*, 19, 57–64.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press. <http://dx.doi.org/10.1007/978-1-4899-2271-7>
- Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, 53, 1024–1037. <http://dx.doi.org/10.1037/0022-3514.53.6.1024>
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268. <http://dx.doi.org/10.1207/S15327965PLI1104.01>
- Escartí, A., Gutiérrez, M., Pascual, C., Villar, E., Pons, J., Brustad, R., & Balagué, G. (2004). Intervención psicosocial, deporte y actividad física como herramientas de mejora de la responsabilidad social en un grupo de adolescentes en riesgo [Psychosocial intervention, sport and physical activity as tools for improving social responsibility in a group of adolescents at risk]. *Encuentros en Psicología Social*, 2, 479–482.
- Gagné, M., Ryan, R., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15, 372–390. <http://dx.doi.org/10.1080/714044203>
- García, M., & Llopis, R. (2011). *Ideal democrático y bienestar personal: Encuesta sobre los hábitos deportivos en España 2011 [Ideal democratic and welfare: Survey sporting habits in Spain 2011]*. Madrid, España: Consejo Superior de Deportes y Centro de Investigaciones Sociológicas.
- García, Y., Matute, S., Tifner, S., Gallizo, M. E., & Gil-Lacruz, M. (2007). Sedentarismo y percepción de la salud: Diferencias de género en una muestra aragonesa [Sedentary lifestyle and health perception: Gender differences in a sample Aragon]. *Revista*

- Internacional de Ciencias de la Actividad Física y del Deporte*, 7(28), 344–358.
- Gaudreau, P., & Antl, S. (2008). Athletes' broad dimensions of dispositional perfectionism: Examining changes in life satisfaction and the mediating role of sport-related motivation and coping. *Journal of Sport & Exercise Psychology*, 30, 356–382.
- Gucciardi, D. F., & Jackson, B. (2015). Understanding sport continuation: An integration of the theories of planned behaviour and basic psychological needs. *Journal of Science and Medicine in Sport*, 18(1), 31–36.
- Gunnell, K. E., Crocker, P. R., Mack, D. E., Wilson, P. M., & Zumbo, B. D. (2014). Goal contents, motivation, psychological need satisfaction, well-being and physical activity: A test of self-determination theory over 6 months. *Psychology of Sport and Exercise*, 15(1), 19–29. <http://dx.doi.org/10.1016/j.psychsport.2013.08.005>
- Hagger, M. S., & Chatzisarantis, N. L. D. (2007). Advances in self-determination theory research in sport and exercise. *Psychology of Sport and Exercise*, 8, 597–599. <http://dx.doi.org/10.1016/j.psychsport.2007.06.003>
- Hagger, M. S., Chatzisarantis, N. L., Hein, V., Pihu, M., Soos, I., & Karsai, I. (2007). The perceived autonomy support scale for exercise settings (PASSES): Development, validity, and cross-cultural invariance in young people. *Psychology of Sport and Exercise*, 8, 632–653. <http://dx.doi.org/10.1016/j.psychsport.2006.09.001>
- Hershberger, S. L. (2006). The problem of equivalent structural models. In G. R. Hancock, & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (pp. 13–42). Greenwich, CT: Information Age Publishing.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Iso-Ahola, S. E., & St Clair, B. (2000). Toward a theory of exercise motivation. *Quest*, 52, 131–147. <http://dx.doi.org/10.1080/00336297.2000.10491706>
- Kassavou, A., Turner, A., & French, D. P. (2013). Do interventions to promote walking in groups increase physical activity? A systematic literature review with meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 10, 1–18. <http://dx.doi.org/10.1186/1479-5868-10-18>
- Kilpatrick, M., Hebert, E., & Jacobsen, D. (2002). Physical activity motivation. A practitioner's guide to self-determination theory. *Journal of Physical Education, Recreation and Dance*, 74(4), 36–41. <http://dx.doi.org/10.1080/07303084.2002.10607789>
- Kinnafick, F. E., Thøgersen-Ntoumani, C., & Duda, J. L. (2014). Physical activity adoption to adherence, lapse, and dropout a self-determination theory perspective. *Qualitative Health Research*, 24(5), 706–718.
- Lee, I., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katzmarzyk, P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. *Lancet*, 380, 219–229. [http://dx.doi.org/10.1016/S0140-6736\(12\)61031-9](http://dx.doi.org/10.1016/S0140-6736(12)61031-9)
- Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The behavioral regulation in sport questionnaire (BRSQ): Instrument development and initial validity evidence. *Journal of Sport and Exercise Psychology*, 30(3), 323–355.
- Maher, J., Pincus, A., Ram, N., & Conroy, D. (2015). Daily physical activity and life satisfaction across adulthood. *Developmental Psychology*, 51(10), 1407–1419.
- Marsh, H. W., Richards, G. E., Johnson, S., Roche, L., & Tremayne, P. (1994). Physical self-description questionnaire: Psychometric properties and a multitrait-multimethod analysis of relations to existing instruments. *Journal of Sport and Exercise Psychology*, 16, 270–305.
- McDonald, R. P., & Marsh, H. W. (1990). Choosing a multivariate model: Noncentrality and goodness of fit. *Psychological Bulletin*, 107, 247–255.
- Moraes, M., Corte-Real, N., Dias, C., & Fonseca, A. M. (2009). Satisfação com a vida, exercício físico e consumo de tabaco em adolescentes de diferentes áreas geográficas de Portugal [Satisfaction with life, physical activity and smoking in adolescents from different geographic areas of Portugal]. *Revista Brasileira de Ciencias del Deporte*, 30(2), 137–149.
- Moreno, D., Estevez, E., Murgui, S., & Musitu, G. (2009). Reputación social y violencia relacional en adolescentes: El rol de la soledad, la autoestima y la satisfacción vital [Social reputation and relationship violence among adolescents: The role of loneliness, self-esteem and life satisfaction]. *Psicothema*, 21, 537–542.
- Moreno-Murcia, J. A., Marcos, P., & Huéscar, E. (2016). Motivos de práctica físico-deportiva en mujeres: Diferencias entre practicantes y no practicantes [Reasons for physical sports in women: Differences between practitioners and non-practitioners]. *Revista de Psicología del Deporte*, 25(1), 35–41.
- Moreno-Murcia, J. A., Marzo, J. C., Martínez-Galindo, C., & Conte, L. (2011). Validación de la escala de "satisfacción de las necesidades psicológicas básicas" y del cuestionario de la "regulación conductual en el deporte" al contexto español [Validation of the scale of "satisfaction of basic psychological needs" questionnaire and "behavioral regulation in sport" to the Spanish context]. *RICYDE. Revista de Ciencias del Deporte*, 26, 355–369. <http://dx.doi.org/10.5232/ricyde2011.02602>
- Moreno, J. A., González-Cutre, D., & Cervello, E. (2008). Motivación y salud en la práctica físico deportiva: Diferencias según el consumo de alcohol y tabaco [Motivation and physical health sports practice: Differences by consuming alcohol and snuff]. *International Journal of Clinical and Health Psychology*, 8, 483–494.
- Moreno, J. A., Parra, N., & González-Cutre, D. (2008). Influencia del apoyo a la autonomía, las metas sociales y la relación con los demás sobre la desmotivación en educación física [Influence of autonomy support, social goals and the relationship with others on motivation in physical education]. *Psicothema*, 20(4), 636–641.
- Moreno-Murcia, J. A., & Vera, J. A. (2011). Modelo causal de la satisfacción con la vida en adolescentes de educación física [Model causal of the satisfaction with the life in adolescent students of physical education]. *Revista de Psicodidáctica*, 16(2), 367–380.
- Moya, M., Sarabia, J. M., & Torres-Luque, G. (2016). Efectos sobre el estado de ánimo en jóvenes tenistas de diferentes niveles de entrenamiento de alta intensidad [Effects on mood in young tennis players of different levels of high-intensity training]. *Revista Latinoamericana de Psicología*, 48(1), 48–51. <http://dx.doi.org/10.1016/j.rlp.2015.09.003>
- Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science*, 7, 325–340. <http://dx.doi.org/10.1177/1745691612447309>
- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology*, 71, 225–242. <http://dx.doi.org/10.1348/000709901158497>
- Ntoumanis, N., Pensgaard, A. M., Martin, C., & Pipe, K. (2004). An idiographic analysis of amotivation in compulsory school physical education. *Journal of Sport and Exercise Psychology*, 26, 197–214.
- Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the satisfaction with life scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment*, 57, 149–161.
- Peiró, C., Valencia, A., Fos, V., & Devís, J. (2016). Identidad deportiva en adolescentes españoles: Propiedades psicométricas de la versión en español de la escala Athletic Identity Measurement Scale-E [Sports identity in Spanish adolescents: Psychometric properties of the Spanish version of the Athletic Identity Mea-

- surement Scale-E scale]. *Revista Latinoamericana de Psicología*, 48(1), 8–17. <http://dx.doi.org/10.1016/j.rlp.2015.09.008>
- Reyes, B., Fleig, L., Godinho, C. A., Montenegro, E., Knoll, N., & Schwarzer, R. (2015). Action control bridges the planning-behavior gap: A longitudinal study on physical exercise in young adults. *Psychology & Health*, <http://dx.doi.org/10.1080/08870446.2015.1006222>
- Rojas Marcos, L. (2005). *La fuerza del optimismo [The power of optimism]*. Madrid, España: Aguilar.
- Ruiz, A., Ruiz, J. R., De la Torre, M., Latorre, P., & Martínez, E. (2016). Influencia del nivel de atracción hacia la actividad física en el rendimiento académico de los adolescentes [Influence of level of attraction to physical activity on adolescent academic performance]. *Revista Latinoamericana de Psicología*, 48(1), 42–50. <http://dx.doi.org/10.1016/j.rlp.2015.09.005>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67. <http://dx.doi.org/10.1006/ceps.1999.1020>
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, 74(6), 1557–1585.
- Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldom, K. M. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology*, 28, 335–354.
- Ryan, R. M., Williams, G. C., Patrick, H., & Deci, E. L. (2009). Self-determination theory and physical activity: The dynamics of motivation in development and wellness. *Hellenic Journal of Psychology*, 6, 107–124.
- Sarria, A., Selles, H., Cañedo-Arguelles, L., Fleta, J., Blasco, M. J., & Bueno, M. (1987). A self-test for quantifying physical activity in adolescents. *Nutrición Clínica y Dietética Hospitalaria*, 7, 56–61.
- Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology*, 57(1), 1–29. <http://dx.doi.org/10.1111/j.1464-0597.2007.00325.x>
- Schwarzer, R., Antoniuk, A., & Gholami, M. (2014). A brief intervention changing oral self-care, self-efficacy, and self-monitoring. *British Journal of Health Psychology*, <http://dx.doi.org/10.1111/bjhp.12091>
- Sebire, S. J., Standage, M., & Vansteenkiste, M. (2008). Development and validation of the goal content for exercise questionnaire. *Journal of Sport & Exercise Psychology*, 30(4), 353–377.
- Sebire, S. J., Standage, M., & Vansteenkiste, M. (2009). Examining intrinsic versus extrinsic exercise goals: Cognitive, affective, and behavioral outcomes. *Journal of Sport & Exercise Psychology*, 31(2), 189–210.
- Sebire, S. J., Standage, M., & Vansteenkiste, M. (2011). Predicting objectively assessed physical activity from the content and regulation of exercise goals: Evidence for a mediational model. *Journal of Sport & Exercise Psychology*, 33(2), 175–197.
- Silva, P., Lott, R., Mota, J., & Welk, G. (2014). Direct and indirect effects of social support on youth physical activity behavior. *Pediatric Exercise Science*, 26, 86–94.
- Smith, A., Ntoumanis, N., & Duda, J. (2007). Goal striving, goal attainment, and well-being: Adapting and testing the self-concordance model in sport. *Journal of Sport and Exercise Psychology*, 29, 763–782.
- Sniehotta, F. F., Scholz, U., & Schwarzer, R. (2005). Bridging the intention-behaviour gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*, 20(2), 143–160. <http://dx.doi.org/10.1080/08870440512331317670>
- Standage, M., & Treasure, D. C. (2002). Relationship among achievement goal orientations and multidimensional situational motivation in physical education. *British Journal of Educational Psychology*, 72(1), 87–103. <http://dx.doi.org/10.1348/000709902158784>
- Torregrosa, D., Belando, N., & Moreno-Murcia, J. A. (2014). Predicción de la satisfacción con la vida en practicantes de ejercicio físico saludable [Predicting life satisfaction in practicing healthy exercise]. *Cuadernos de Psicología del Deporte*, 14(1), 117–122.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 271–360). New York, NY: Academic Press.
- Vallerand, R. J. (2001). A hierarchical model of intrinsic and extrinsic motivation. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 263–320). Champaign, IL: Human Kinetics.
- Vallerand, R. J. (2007). Intrinsic and extrinsic motivation in sport and physical activity. In G. Tenenbaum, & R. C. Eklund (Eds.), *Handbook of sport Psychology* (3.^a ed., Vol. 12, pp. 59–83). New York, NY: Wiley.
- Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction et validation de l'Echelle de Motivation en Éducation (EME). *Canadian Journal of Behavioral Sciences*, 21(3), 323–349.
- Vallerand, R. J., & Rousseau, F. L. (2001). Intrinsic and extrinsic motivation in sport and exercise: A review using the hierarchical model of intrinsic and extrinsic motivation. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (2^d ed, pp. 389–416). New York, NY: John Wiley & Sons.
- Vansteenkiste, M., Niemiec, C., & Soenens, B. (2010). The development of the five minitheories of self-determination theory: An historical overview, emerging trends, and future directions. In T. Urdan, & S. Karabenick (Eds.), *Advances in motivation and achievement*, vol. 16: *The decade ahead* (pp. 105–166). UK: Emerald Publishing.
- Vierling, K., Standage, M., & Treasure, D. (2007). Predicting attitudes and physical activity in "at risk" minority youth sample. A test of self-determination theory. *Psychology of Sport and Exercise*, 8, 795–817. <http://dx.doi.org/10.1016/j.psychsport.2006.12.006>
- Viladrich, C., Torregrosa, M., & Cruz, J. (2011). Calidad psicométrica de la adaptación española del Cuestionario de Regulación Conductual en el Deporte [Psychometric quality of the Spanish adaptation of the Questionnaire Behavioral Regulation in Sport]. *Psicothema*, 23(4), 786–794.
- Wilson, P. M., Rogers, W. T., Rodgers, W. M., & Wild, T. C. (2006). The psychological need satisfaction in exercise scale. *Journal of Sport and Exercise Psychology*, 28, 231–251.
- Wójcicki, T. R., Szabo, A. N., White, S. M., Mailey, E. L., Kramer, A. F., & McAuley, E. (2013). The perceived importance of physical activity: Associations with psychosocial and health-related outcomes. *Journal of Physical Activity & Health*, 10(3), 343–349. Retrieved from <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3856648&tool=pmcentrez&rendertype=abstract>