

Original research article

MOTIVATIONAL ASPECTS AND PERSONALITY CORRELATES OF PHYSICAL EXERCISE BEHAVIOR

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Abstract. *Although exercise can have many advantages, there are still many people that tend to be less active. For this reason, an attempt was made to understand the factors related to physical activity and those related to encouraging exercise, which is an essential area of health promotion and a priority in preventing serious diseases. The aim of the study was to analyze psychological factors (personality traits and motivation) related to physical activity and those encouraging or reducing exercise. 474 volunteers who regularly exercise were recruited for the study. The participants completed the Big Five Questionnaire and Behavioral Regulation Exercise Questionnaire-2, and their exercise frequency was recorded. The results showed that personality traits and motivation are strongly related to exercise frequency and that both seem to play a significant predictive role in structuring exercise behavior.*

Key words: *Personality, Motivation, Physical fitness, Behavioral regulation.*

INTRODUCTION

Sport and physical activity promote general well-being. The relevant role of sport in reducing the risk of many physical problems such as cardiovascular disease, high blood pressure, and obesity has been demonstrated during the last decades (Crandell, Crandell & Vender Zanden, 2009). Moreover, sport participation has a positive relationship with the aspects of emotional and behavioral well-being, particularly self-concept, self-esteem and self-efficacy (Bowker, 2006; Donaldson & Ronan, 2006). In addition, a reduction of depression and anxiety levels was shown (Brosse, Sheets, Lett & Blumenthal, 2002). Sport benefits are also significant in cognitive functioning, including motor function, memory, cognitive speed and attention (Colcombe & Kramer, 2003; Angevaren, Verhaar, Aleman & Vanhees, 2008).

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Although exercise can have many advantages, there are still many people who tend to be less active (Sisson & Katzmarzyk, 2008). For this reason, the attempt to understand the factors related to physical activity and those encouraging exercise is an essential area of health promotion and a priority in preventing serious disease (Jones, Harris, Waller & Coggins, 2005). Several studies focus on the relationship between personality, exercise motivation and exercise participation, because these factors could be important to promoting a healthy lifestyle and exercise (Ingledeu, Markland & Sheppard, 2004; Lewis & Sutton, 2011). Furthermore, this relation can help us understand what it is that makes people engage in more frequent exercise.

Many personality researchers argue that the trait dimensions can be reduced to five bipolar categories (McCrae & Costa, 1990; 1995; 1997; Marshall, Wortman, Vickers, Kusulas & Hervig, 1994). The five-factor model (FFM) consists of extraversion: that implies an energetic approach to the world and includes such traits as assertiveness, activity, talkativeness and sociability; agreeableness: refers to a prosocial and communal orientation toward others and includes traits such as altruism, sympathy, trust, and modesty; conscientiousness: which implies a focus on responsibilities and is characterized by thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and self-discipline; openness to experience: describes the originality, and complexity of an individual's mental and experiential life and is characterized by activity, imagination, aesthetics and sensitivity; neuroticism: contrasts emotional stability and is characterized by negative emotionality, such as anxiety, sadness and impulsiveness.

The findings suggest that personality and physical activity are strongly related, especially higher extraversion (Courneya, Bobick & Schinke, 1999; Conner & Abraham, 2001; Bogg, Voss, Wood & Roberts, 2008; Rhodes & Smith, 2006) and conscientiousness (Bogg & Roberts, 2004; Rhodes, 2006) and lower neuroticism (Bogg et al., 2008; Rhodes et al., 2006) seem to affect the frequency of exercise behavior.

Nevertheless, this type of research cannot be completely useful in providing the necessary information for understanding the processes underlying the relationship between personality and physical activity, and for this reason several researchers suggest that a factor that could provide more information for the understanding of these processes could be motivation (Ingledeu & Markland, 2008; Lewis et al., 2011). Particularly, Ingledeu et al. (2004) suggest and recommend using self-determination theory (SDT) (Deci & Ryan, 2000) for assessing exercise motivation, because it allows for a more differentiated view of behavioral regulation.

Self-Determination Theory (Deci & Ryan, 1985; Ryan, 1995; Ryan & Deci, 2000) is a macro-theory of human motivation that has a significant impact on research regarding motivation in sport. This theory gives prominence to the distinction in intrinsic and extrinsic motivation, deleting the internal-external dichotomy and proposing an intrinsic-extrinsic continuum. Deci et al. (1985) in fact, suggest motivation on a continuum from amotivation to extrinsic motivation up to intrinsic motivation. Intrinsic motivation refers to doing an activity for pleasure; in contrast, extrinsic motivation means that the athlete does not participate in sport for fun but because of external factors. In this continuum, Deci et al. (1985) have distinguished various forms of extrinsic motivation that represent a continuum that covers different degrees of the self-determination of behavior, from non-self-determination, to self-determined. Deci et al. (1985) distinguish six different forms of behavioral regulation stages: amotivation, external regulation, introjection, identification, integration, and intrinsic regulation. Amotivation is a state in which people

lack the intention to behave. External regulation is a state in which people's behavior is controlled by specific external contingencies. People behave in a way so as to attain the desired consequence such as tangible rewards or to avoid a threatened punishment. Introjected regulation implies an external adjustment that has been internalized but not fully accepted. Identified regulation is the process through which people recognize and accept the underlying value of certain behavior. Integrated regulation is the fullest, most complete form of internalization of extrinsic motivation, for it not only involves identifying with the importance of behavior, but also the integration of those identifications with other aspects of the self. Intrinsic regulation involves taking part in an activity for the enjoyment and satisfaction inherent in engaging in behavior itself (Ryan et al., 2000). Several studies indicate that individuals who exhibited self-determined types of regulation show more persistence in physical activity (Pelletier, Fortier, Vallerand & Brière, 2001; Sarrazin, Guillet & Cury, 2001; Costa & Oliva, 2011), more exercise adherence (Fortier & Grenier, 1999) more physical activity intentions (Wilson, Rodgers, Hall & Gammage, 2003) and more enjoyment of physical exercise (Vlachopoulos & Karageorghis, 2005).

There are, in fact, a number of demonstrations that have revealed the link between intrinsic and identified motivation and increased exercise participation (Craike, 2008; Ingledew et al., 2008; Standage, Sebire & Loney, 2008). Indeed, introjected motives were associated with higher levels of physical activity (Gillison, Osborn, Standage & Skevington, 2009), while external regulation had a negative influence on activity levels (Craike, 2008).

Using self-determination theory could possibly clarify the motivational processes by which personality traits influence exercise. Ingledew et al. (2004) investigated the relationship between personality and exercise motivation, finding that neuroticism was associated with more introjected regulation, extraversion with more identified and intrinsic regulation, openness with less external regulation, conscientiousness with less external regulation and more intrinsic regulation, and psychoticism with more external regulation. Recently, Ingledew et al. (2008) found that conscientiousness had direct negative effects on external and introjected regulation and that agreeableness and conscientiousness correlated negatively with external regulation and introjected regulation. In recent years, a positive correlation between extraversion and identified regulation and negative correlations of emotional stability with introjected regulation and extraversion with amotivation were demonstrated (Lewis & Sutton, 2011).

Nevertheless, the exploration of the interaction between personality traits and motivation in predicting exercise behavior is still at an early stage and for this reason it is necessary to further explore the interaction of personality and motivation in predicting exercise behavior.

Indeed, while Lewis and Sutton (2011) extended previous research by including the agreeableness trait and amotivation, they used a sample made up of undergraduate students, declaring the necessity to extend their work to a wider population. Furthermore, while previous research to collect information about practice frequency has in general used the number of exercise days in a week (Lewis & Sutton, 2011), there are insufficient studies that take into consideration weekly hours of training. The weekly hours of training could be a more sensitive measure of exercise frequency in regular exercisers; in fact, this measure reveals the combination of two factors: the number of exercise days in a week and the daily hours of exercise.

Based on previous considerations, the study aimed to analyze psychological factors related to physical activity and those encouraging or reducing exercise. Specifically, the

purpose of this study is to extend previous research to better understand the role of personality and motivation aspects in predicting exercise behavior.

THE METHOD

Participants

Participants are 474 gym frequenters who exercise regularly during the year. Exercisers (Male=235 and Female=239) are recruited from fitness clubs and, after having signed the informed consent, they consented to complete a number of questionnaires. The mean age of the male participants was 36.76 (SD=13.41) and of the female 36.75 (12.77). Participation was voluntary and the study met the criteria for the university's ethical approval process.

Measures

Personality: Personality traits were measured using the Big Five questionnaire (Caprara, Barbaranelli & Borgogni., 1993). The BFQ contains five domain scales: Energy/Extraversion, Agreeableness/Friendliness, Conscientiousness, Emotional stability (vs. Neuroticism), and Openness. For each of the 132 items, respondents indicate the extent to which they assign personal relevance on a 5-point scale ranging from very false for me (1) to very true for me (5). Construct validity of the BFQ scales has been demonstrated by high correlations with analogous scales, such as the NEO-PI on both the Italian and American samples (Caprara, Barbaranelli & Borgogni, 1996; Barbaranelli & Caprara, 2000).

Motivational regulations for exercise: To measure the motivational regulations for exercise, an adapted Italian version of the Behavioural Regulation Exercise Questionnaire-2 (BREQ-2; Markland & Tobin, 2004; Costa, Oliva, Cuzzocrea, & Larcán, 2013) was used. This is the last developed version of the BREQ (Mullan et al., 1997). It comprises 19 items scored on a five-point scale ranging from 0 (not true for me) to 4 (very true for me) and the original version comprised five scales: Amotivation, External Regulation, Introjected Regulation, Identified Regulation, and Intrinsic Regulation. Alpha values for the present sample are: Amotivation = 0.64; External Regulation = 0.75; Introjected Regulation = 0.63; Integrated Regulation = 0.63; and Intrinsic Motivation = 0.86.

Exercise Frequency: Participants were asked two questions about their exercise frequency: the first question was "In general, how many days a week do you train?" and the second was "In general how many hour per day do you train?". To produce a score for the overall extent of exercise frequency, the number of days was multiplied for the number of hours.

Data Analysis

The Statistical Package for the Social Science (SPSS) was used to conduct the bivariate correlations and the hierarchal regression analysis to determine the relationship between

personality, motivation and exercise frequencies. In the hierarchical multiple regression, the five traits of personality (Energy/Extraversion, Agreeableness/Friendliness, Conscientiousness, Emotional stability and Openness) were entered into a regression model in the first block of the analysis. In the second block, the five scales of the motivational regulations for exercise (Amotivation, External Regulation, Introjected Regulation, Identified Regulation, and Intrinsic Regulation) were entered as predictor variables into the model. Finally, the exercise frequency was entered as a criterion variable. All the data were transformed into \sin^{-1} (Freeman & Tukey, 1950) to normalize the distribution.

RESULTS

Descriptive statistics and correlation analysis

In table 1 we can see the synthesized mean and standard deviations of personality traits measured by the BFQ, and of the behavioral regulation scores. The Correlational Analysis (Pearson's r) shows a significant correspondence between the personality traits and the motivational regulations for exercise (table 1).

Table 1 Descriptive Statistics (M and SD) and correlations between personality aspects, motivation components and exercise frequency

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Energy/Extraversion	56.15	21.17										
2. Agreeableness	49.25	23.94	.17**									
3. Conscientiousness	67.64	25.26	.37**	.19**								
4. Emotional stability	78.14	24.33	.09*	.18**	.09							
5. Openness	81.52	25.42	.35**	.37**	.39**	.23**						
6. Amotivation	.36	.37	-.09*	-.03	-.09*	.03	-.03					
7. External Regulation	.47	.46	-.12**	-.07	-.17**	-.09*	-.13**	.29**				
8. Introjected Regulation	.98	.92	.14**	-.08	-.02	-.23**	-.08	.16**	.13**			
9. Identified Regulation	3.76	.83	.17**	.04	.12*	-.06	.02	-.21**	-.15**	.26**		
10. Intrinsic Motivation	3.68	.88	.12*	.05	.05	.04	.09	-.16**	-.24**	.05	.32**	
11. Exercise Frequency	5.54	2.90	.15**	-.11*	-.02	.01	-.02	-.03	-.13**	.14**	.17**	.19**

M – mean, SD - standard deviation

* Significant at $p < .05$; ** Significant at $p < .01$

Specifically, Energy/Extraversion is negatively correlated with amotivation ($r = -.092$; $p = .045$) and external regulation ($r = -.124$; $p = .007$). Furthermore, Energy/Extraversion is positively correlated with introjected regulation ($r = .138$; $p = .003$), identified regulation ($r = .166$; $p < .001$) and intrinsic regulation ($r = .117$; $p = .010$). With respect to conscientiousness, the results show that it is negatively related with amotivation ($r = -.092$; $p = .044$) and with external regulation ($r = -.173$; $p < .0001$), while it is positively correlated with the identified regulation ($r = .117$; $p = .011$). Emotional stability proved to be negatively correlated with external ($r = -.091$; $p = .047$) and introjected regulation ($r = -.234$; $p < .001$). Finally, Openness is negatively related with external regulation ($r = -.134$; $p = .003$) and positively correlated with intrinsic motivation ($r = .089$; $p = .053$).

Furthermore, correlations with exercise frequency ($M = 5.54$, $SD = 2.90$), personality and motivational regulations for exercise were carried out. Specifically, exercise frequency is positively associated with Energy/Extraversion ($r = .154$; $p = .001$) and negatively related with Agreeableness/Friendliness ($r = -.108$; $p = .019$). With respect to motivational regulations, exercise frequency is negatively related with external regulation ($r = -.127$; $p = .006$) and positively related with introjected regulation ($r = .143$; $p = .002$), identified regulation ($r = .172$; $p < .001$) and intrinsic regulation ($r = .186$; $p < .001$).

Hierarchical multiple regression

The hierarchical multiple regression analysis was used to examine the relationship between personality, motivation and exercise frequency (Table 2). The results show that personality seems to be relevant for exercise frequency, $F(5,468) = 4.67$; $p < .001$, $R^2 = .048$. Specifically, exercise frequency seems to be positively predicted from Energy/Extraversion, $t = 4.12$; $p < .001$, $\beta = .20$ and negatively predicted by Agreeableness/Friendliness $t = -2.53$; $p = .012$, $\beta = -.12$.

When motivational regulation for exercise was entered into the second block after personality traits, there was a significant change in R^2 , F change ($5,463$) = 5.93; $p < .001$, $R^2 = .057$. The final model seems to predict exercise frequency in a relevant way, $F(10,463) = 5.42$; $p < .001$, $R^2 = .105$ and specifically with the introduction of motivational regulations exercise frequency tends to be predicted from Energy/Extraversion, $t = -3.12$; $p = .002$, $\beta = .16$ and Agreeableness/Friendliness, $t = -2.60$; $p = .010$, $\beta = -.12$, but also from the external regulation $t = -2.217$; $p = .027$, $\beta = .11$, introjected regulation $t = 2.00$; $p = .046$, $\beta = .10$, and intrinsic motivation, $t = 2.578$; $p = .010$, $\beta = .12$.

Table 2 Hierarchical multiple regression results of personality aspects, motivation components and exercise frequency

	Exercise Frequency	R^2_{adj}	β	t
Step 1		.04		
	Energy/Extraversion		.21	4.12**
	Agreeableness		-.12	-2.53*
	Conscientiousness		-.06	-1.27
	Emotional stability		.03	.59
	Openness		-.03	-.56
Step 2		.09		
	Energy/Extraversion		.16	3.12**
	Agreeableness		-.12	-2.59*
	Conscientiousness		-.08	-1.57
	Emotional stability		.05	.98
	Openness		-.03	-.56
	Amotivation		.03	.57
	External Regulation		-.11	-2.22*
	Introjected Regulation		.10	2.00*
	Identified Regulation		.09	1.74
	Intrinsic Motivation		.12	2.58*

R^2_{adj} = Adjusted R-Squared; β = Beta coefficient; t = t-ratio

* Significant at $p < .05$; ** Significant at $p < .01$

DISCUSSION

Exploring factors that promote people to engage in more frequent exercise is a relevant area of study that is crucial for well-being. Personality traits play a relevant role in engaging physical activity, but the mechanism underlying this relationship is not clear yet. Several studies have shown that motivation can have a relevant impact, and for this reason the aim of this study is to explore the motivational processes by which personality traits influence engagement in exercise behavior.

The results are consistent with many past studies that showed that personality predicts exercise frequency and motivational regulations give a significant contribution to promoting exercise frequency and healthy exercise behavior (Oliva & Costa, 2011).

Furthermore, the results indicate a relevant relationship between personality traits and motivation. Specifically, exercise frequency seems to be positively predicted from high levels of Extraversion/Energy and lower Agreeableness/Friendliness traits, and this influence seems to be more effective when the motivational regulation factor was introduced into the model. The significant contribution that motivational regulation gives to predict exercise frequency is evidenced by the negative prediction of external regulation and the positive prediction of identified regulation and intrinsic motivation on exercise frequency.

These findings suggest that Extraversion/Energy is a relevant factor for predicting physical activity, in fact people with a high score in Energy (or Extraversion) tend to be active and energetic and, as previous research showed, it is significantly related with physical activity. Furthermore, Energy (or Extraversion) is negatively related with the less self-determined motivation regulation (amotivation and external regulation) and there is a positive correlation with more self-determined motivation regulation (identified regulation and intrinsic motivation). This result indicates that exercisers, who have more self-determined motivation to take part in physical activity, tend to maintain physical activity for a longer period of time (Ryan & Deci, 2007). Extraversion/Energy is also positively related with introjected regulation; this is an extrinsic form of regulation, but previous research suggests that this type of external motivation can be relevant for promoting exercise in a short period of time (Gillison et al., 2009). This finding also explains the results of this study that show that introjected regulation is positively correlated and positively predicts exercise frequency.

The other motivational factor that gives a strong contribution to promoting exercise frequency is Agreeableness (or Friendliness) that negatively predicts the exercise. This result is in line with Lewis and Sutton's (2011) findings, even if this particular personality trait was not sufficiently explored in the past and its role in physical activity can probably be more clearly understood exploring different social aspects. People who score high on agreeableness tend to be, in fact, cooperative, helpful and friendly, and for this reason they could be interested to other social activities. Indeed, the participants of this study are involved in gym activity, which is an individual physical activity, and to better understand this relationship it will probably be necessary to verify the role of cooperative sports.

Although in our study the other personality traits do not make a direct contribution to exercise frequency (such as, Lewis et al., 2011), their strong correlation with motivational regulation, as a possible predictor aspect in promoting exercise, was recorded. Conscientiousness is negatively correlated with amotivation and external regulation,

while it is positively related with the identified regulation. Conscientiousness is the tendency to show self-discipline, thoroughness and the need for achievement and its negative relationship with less self-determined motivation and positive relationship with more self-determined motivation to exercise may reflect the need for competence, such as suggest by Ingledeu et al. (2004). Emotional stability (on the opposite end of Neuroticism) is negatively related with external and introjected regulation and could represent the tendency of the less self-regulated motivation exerciser to practice sport to avoid guilt or anxiety. Finally, Openness proved to be negatively related with external regulation and positively related with intrinsic motivation; this relationship is in accord with the results of previous studies (Ingledeu et al., 2004) and could be explained by the need to satisfy the basic psychological need for autonomy.

This study aimed to explore personality and motivational factors that can promote exercise frequency and the results showed how motivational regulations for exercise can give a strong contribution to better understanding the relationship between personality and exercise. This type of research is not sufficient and needs to be more detailed. In fact, previous research that examined the role of motivation and personality in physical activity together relied on university students (Lewis et al., 2011) or exercisers that did practice in a continuous manner (Ingledeu et al., 2008). The findings showed that in heterogeneous groups with a history of regular exercise during the whole year, the role of the motivational regulations to understand the link between personality traits and physical activity is very relevant.

Furthermore, for the more specific sample of this study, the results indicate a strong relationship between personality and motivation and this relationship could be relevant for a better understanding of the underlying mechanisms between personality and physical activity.

Even if this study can give a good contribution to understanding the phenomenon, it was not exhaustive. In fact, the correlational research design cannot give a definitive explanation of the question and furthermore, this study focused only on gym exercisers. Future research should use different types of sport and, in particular, it could explore the differences between individual and cooperative physical activity. Another relevant aspect of understanding the relationship between personality traits, motivation and exercise could be basic psychological needs. There are few studies that explore this area and future research should give it more attention, because it could provide a relevant contribution.

This finding may inspire new insights into the function of personality aspects and behavioral regulation, identifying psychological factors that can better promote healthy physical activity and reduce potential risk factors of dysfunctional exercise behavior.

Perspective

Understanding psychological mechanisms related to physical activity is an essential topic worth pursuing in the field of sport psychology, as a priority for preventing serious diseases. This study aimed to analyze psychologically relevant determinants that encourage or reduce exercise behavior. Personality dimensions and motivation play an important role in engaging physical activity. Sport psychologists are encouraged to monitor these individual traits related to impaired performance and are predictive of dysfunctional behavior, such as eating disorders or excess training (Costa & Oliva, 2012; Kjelsås & Augestad, 2004; Oliva, Costa, Cuzzocrea, Larcan, 2013).

This study highlighted the importance of specific personality characteristics, such as Extraversion and Agreeableness, as related to functional behavioral regulation of exercise. Emotional stability was identified as a determinant of less self-regulated motivation for exercise behavior.

Therefore, it is recommended that practitioners acknowledge all the facets of exercise behavior and help at-risk athletes to develop a positive attitude to physical activity as intrinsically motivating, in order to prevent the development of overtraining syndrome and negative affective states (Costa, Hausenblas, Oliva, Cuzzocrea, Larcan, 2013; Oliva, Costa & Larcan, 2013; Jowett, 2008; Sørensen, 2006).

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KORELACIJE IZMEĐU ASPEKATA MOTIVACIJE I ODLIKA LIČNOSTI U FIZIČKOM VEŽBANJU

Iako vežbanje može da donese mnoge prednosti, ipak postoji veliki broj ljudi koji su fizički manje aktivni. Iz ovog razloga, pokušaj da se razumeju faktori koji se tiču fizičke aktivnosti i onih koji se tiču podsticanja na vežbanje, što je značajna oblast promocije zdravlja, je prioritet u prevenciji ozbiljnih bolesti. Cilj istraživanja bio je da se analiziraju psihološki faktori (odlike ličnosti i motivacija) koji se tiču fizičke aktivnosti i oni koji podstiču ili sputavaju vežbanje. 474 volontera koji redovno vežbaju učestvovali su u istraživanju. Učesnici su popunili Big Five Questionnaire i Behavioral Regulation Exercise Questionnaire-2, a beležena je i učestalost njihovih navika o vežbanju. Rezultati su pokazali da su odlike ličnosti i motivacija jako povezani sa učestalošću vežbanja i da oba igraju značajnu ulogu u strukturisanju vežbanja.

Ključne reči: ličnost, motivacija, fizička spremnost, regulacija ponašanja.