Chapter

Personality Traits, Achievement Motivation, and Self-Regulation in Physically Active and Sedentary Young Adults

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Abstract

Previous research has established a link between exercise and executive functions. However, how personality, motivation, and self-regulation can influence this association have been little investigated. Studies investigating in these aspects have shown that physically active individuals are more extrovert, conscientious and open to new experiences than sedentary individuals. Those who are sedentary tend to show more neuroticism and less self-regulation. In this chapter, the literature exploring these aspects is reviewed. In addition, a study to examine the impact of these factors in physically active and sedentary young adults is presented. The Big Five Inventory, the Intrinsic Motivation Inventory, the Achievement Motivation scales, and the Adult Temperament Questionnaire were administered to evaluate personality, motivation, and self-regulation. The results revealed that active participants significantly differed from sedentary participants in terms of personality showing higher emotional stability, extraversion, and openness to experiences, in addition to greater inhibitory control (self-regulation). Associations between better control of emotions and impulses and cognitive control were also explored, finding a significant correlation between them. Some guidance is included to help health providers to design physical activity programs to promote cardiovascular exercise in populations with high levels of inactivity.

Keywords: Aerobic Exercise, Executive Functions, Working Memory, Personality, Motivation

1. Introduction

It is well established that exercise has a positive effect on our mind and body [1, 2]. Studies [3–5] looking at the effects of exercise on cognition have shown that chronic aerobic exercise tends to specifically enhance executive functions such as inhibitory control, task switching, and working memory. In addition, research [6, 7] has also shown that exercise interventions can be used to treat certain clinical conditions in which mood, anxiety, and/or depression disorders are presented along with diminished cognitive performance. However, the mechanisms through which these cognitive and emotional effects are exerted are still not well understood [8].

2. Athlete personality

Personality may be understood as a set of dynamic but stable characteristics that make a person unique [9]. The concept of personality refers to the self, social and world functioning skills learnt along life, which are influenced by genetics and nurture factors [9]. These skills affect how an individual perceives, interprets, and behaves in the world, making this individual's behavior predictable [9, 10].

According to the Big Five theory [11–13], personality can be divided into five general dimensions (see **Table 1**): extraversion, affability, conscientiousness, openness, and emotional stability, each of which can be further separated in two other subdimensions. Extraversion refers to a person's inclination to seek stimulation from the outside world, especially in the form of attention from other people. This dimension includes dynamism and dominance. Affability refers to a person's tendency to put others' needs ahead of their own, and to cooperate rather than compete with others. This dimension includes the subdimensions of cooperation/empathy and cordiality/kindness. Conscientiousness refers to a person's ability to exercise self-discipline and control in order to pursue their goals. This dimension is subdivided into scrupulosity and perseverance. Openness defines a person who enjoys learning and being updated on cultural matters or living new experiences. Emotional stability refers a person's capacity to control their emotions and impulses to maintain a low level of anxiety and vulnerability. It includes control of emotions and impulses and is opposed to the concept of neuroticism, which describes a person's tendency to experience negative emotions, including fear, sadness, anxiety, guilt, and shame.

Vanden et al. [14] have argued against the idea of an "athlete personality", claiming that athletes present with diverse personalities. In that vein, Brinkman [15] has argued that the most likely is that personality traits affect the level and type of motivation of the person, and then indirectly, the effort exerted to practice physical exercise. In a recent systematic review, Wilson and Dishman [16] reported that physical activity was associated with personality traits such as extraversion, neuroticism and conscientiousness, in line with a previous review [17]. Wilson

Big five questionnaire		
Dimensions:	**Subdimensions:**	
Extraversion	Dynamism	Dominance
Affability	Cooperation/empathy	Cordiality/kindness
Conscientiousness	Scrupulosity	Perseverance
Openness	Openness to culture	Openness to experience
Emotional Stability	Control of emotions	Control of impulses
Distortion scale		
ML-1 and 2 scales (achievement motivation)		
Adult Temperament Questionnaire (ATQ, effortful control).		
Activation Control	Attentional Control	Inhibition Control
Intrinsic Motivation Inventory (IMI, level of motivation during the cognitive tasks)		
Interest/Enjoyment,	Perceived Competence	Value/Usefulness
Pressure/Tension,	Effort exerted during task	

Table 1.
Questionnaires and scales used to measure personality, achievement motivation and self-regulation.

and Dishman [16] also found a small but significant correlation between level of physical activity and openness. The authors explain the relationship between extraversion and physical activity as the search of extroverts for sensory and social stimulation, usually being more social and outgoing, and therefore more exposed to activities involving physical activity. With regards to neuroticism, it has been frequently associated with anxiety and with a higher awareness of autonomic responses. Thus, individuals scoring high in neuroticism would present with a lower tolerance to high intense internal or external sensations and they would interpret increased arousal as negative [18, 19], avoiding physical activity. As for conscientiousness, people with high levels of physical activity show also higher levels of discipline and self-regulated behavior [16]. Self-discipline motivates them to fulfill their objectives, obtaining positive reward after achieving such self-imposed goals, and increasing their feelings of competence [20]. Adherence to healthy behaviors is more likely to be observed in people with high levels of conscientiousness [21]. Finally, individuals with high levels of openness are more receptive to new experiences and activities that involve physical activity [16].

Sutin et al. [22] carried out a meta-analysis where they explored the relationship between the Five Factor Model of personality and physically inactive lifestyle in 16 studies containing large samples. They observed that high neuroticism and low consciousness were strongly correlated with sedentary behavior, in agreement with Rhodes and Smith's [17] and Wilson and Dishman's [16] reviews. Conscientious individuals engage in physical activity motivated for internal, rather than external, sources [23], being concerned about healthy lifestyle rather than about physical appearance [24]. Instead, neurotic individuals are concerned about not looking physically bad to others [25], holding avoidance-related physical activity goals. They feel obligated to do exercise and guilty if they do not do it [23]. Interestingly, Sutin et al. [22] found that extraversion was the factor more highly correlated to physical activity. The authors explained it as these individuals having a more active lifestyle that include diverse activities among which there is a high variety of physical activity. Ebstrup et al. [26], for example, observed that extraverts tended to sit for fewer hours per day than introverts. Openness was also found to be associated with physical activity [22], although these individuals spent more hours than sedentary ones doing both physical and non-physical activities (reading or watching movies). Associations between personality traits and physical activity was not mediated by differences in age or sex [22].

3. Motivation

Motivation can be described as the reason why an individual initiates a behavior and maintains it along time to achieve a goal [27]. Specifically, achievement motivation [28] refers to the need to excel in an activity for which an individual wants to surpass him/herself or others [27, 29]. It can be driven by internal motivation, aiming just self-satisfaction, or by external motivation, pursuing an external reward that can be social or material [27, 30]. It is highly associated with the participant's interests [30, 31]. For example, someone may have a high achievement motivation at work, but not for sport. The Intrinsic Motivation Inventory (IMI) [32] is one of the scales measuring this kind of achievement motivation.

Mehrabian [33] or Morales-Vallejo [34], however, describe achievement motivation as a general trend for risk taking and ambition. Individuals showing this general trend perseverate and self-regulate themselves until achieving their goals. Achievement motivation scales (ML-1 and ML-2) assess this type of achievement motivation.

4. Self-regulation

Self-regulation refers to processes triggered to control behavior, cognition, and emotional states [35]. This construct is measured, for example, by the Adult Temperament Questionnaire (ATQ) [36]. The concept includes effortful/executive control, referring to the emotional, behavioral, or/and physiological control of responses to focus attention on a goal-directed task, suppressing non-relevant information or actions [10, 37]. Thereby, effortful control is the dimension of temperament controlling emotional reactivity, both positive and negative [38, 39]. Rothbart and Rueda ([10], see also [40–43]) considered as part of the anterior attentional network system and highly related to executive functions. Besides, activation control refers to the capacity to carry out a task, despite a natural tendency to avoid it, since such activity is very demanding or frightening for the individual [36]. Attentional and inhibition control can be identified with working memory and inhibition respectively [44, 45]. The difference between executive and effortful control is that the first is involved in cognitive control and flexibility, whereas the second is in the regulation of emotional reactivity [39]. It is also important to note that certain temperamental dimensions correlate with certain dimensions from the Big Five's questionnaire [36]. In the case of effortful control, for example, it is negatively correlated with neuroticism, and positively correlated with consciousness [36, 46].

4.1 Self-regulation and cognitive control

It has been suggested (see for example [47–49]) that cognitive control, as measured by cognitive tasks such as inhibitory and working memory tasks, is the antecedent of self-regulation, and therefore of physical activity adherence. In other words, it is argued that the reason why people exercise on a regular basis is that they have good cognitive control, which allows them to self-regulate better, and so, keep training for longer periods of time. According to this view, poor cognitive control would lead to lower self-regulatory capacity and greater tendency to be driven by routine reactions, succumbing to temptation or impulsive behavior (overeating, sedentariness) [50–53].

5. Do the physically active differ from sedentary young adults in personality traits, motivation, and self-regulation?

To investigate the extent to which personality traits, motivation, and self-regulation might differ between physically active and sedentary young adults, a study where participants that had previously shown differences in cognitive control or executive functions in our previous studies [54, 55] was carried out.

The objective of this study was to investigate possible differences in personality, achievement motivation, and self-regulation between the physically active and sedentary participants. Participants, that explained why active participants showed better executive/cognitive control (inhibition and working memory) than sedentary participants in our previous studies [54, 55]. We hypothesized that young adults showing higher levels of physical activity and fitness (keeping a frequency of exercise of at least 6 hours per week during at least 10 years) will present with higher scores in the Big Five dimensions of perseverance and emotional stability, greater achievement motivation, and better self-regulation. We also predicted that effortful control (measured by the ATQ) will be correlated with emotional stability

(Big Five) and its subcomponents 'control of emotions' and 'control of impulses', as Evans and Rothbart [36] previously found. In addition, cognitive control, as measured by the stop signal task (SST; inhibitory control) and the AOSPAN (working memory) will be correlated with effortful control (ATQ) and emotional stability (Big Five); and will be positively associated with physical exercise practice over time.

5.1 Materials and methods

5.1.1 Participants

Participants from two previous published studies [54, 55] were invited to take part in this study to complete some additional cognitive tasks and personality questionnaires. They gave their informed consent and were paid or given course credits if they were university students. As in previous studies, the inclusion criterion for the active group was having practiced cardiovascular exercise for at least 10 years, following an exercise routine of at least 6 hours distributed in at least 3 days a week. Sedentary participants could not have practiced cardiovascular exercise for more than 1 hour a week in the last 4 years and they could not have exercised with a high frequency or intensity during their childhood (see [55]). Following these criteria, 70 participants, 36 active and 34 sedentary, aged between 18 and 30 years (M = 22.39, SD = 3.34), were included in the study according to their frequency of aerobic exercise and fitness levels. The active group exercised an average of

	Group	
Variables	**Active**	**Sedentary**
Total participants	36	34
Age	22.14 (3.14)	22.65 (3.57)
Education	15.22 (3.63)	13.71 (2.98)
Rockport	56.94 (8.46)	45.35 (7.94)
Total Exercise Months along life	233.67 (217.96)	67.56 (45.57)
Total Exercise Hours along life	8072.48 (4937.98)	1578.23 (1616.57)
Vocabulary	43.14 (6.49)	45.03 (6.88)
Participants per study:		
Padilla et al. [10]: AOSPAN + SST	29	29
Padilla et al. [9]:	7	5
Participants per task:		
Big Five	36	34
ML	36	34
ATQ	36	34
IMI	34	33

Note: Adult Temperament Questionnaire (ATQ), Achievement Motivation Test (ML), Intrinsic Motivation Inventory (IMI), Automatic Operation Span Task (AOspan), and Stop Signal Task (SST).

Table 2.
Demographic variables averages and standard deviations in brackets.

10.44 hours per week (SD = 5.88), and the sedentary group exercised 1.10 hours per week (SD = 2.11).

To make sure that groups did not differ in terms of education or intelligence, years of education and intelligence were measured. The Vocabulary Subtest of the Wechsler Adult Intelligence Scale- III (WAIS-III) [56] was used to evaluate intelligence. None of the participants had a history of mental disorder or physical illness incompatible with the study. The characteristics of both groups are presented on **Table 2**.

5.1.2 Procedure

The experiment was performed in accordance with the ethical standards stated in the 1964 Declaration of Helsinki.

5.1.2.1 Questionnaires and scales

Participants were first requested to complete the following online personality and motivation questionnaires from home (**Table 1**).

Personality was evaluated using the "Big Five Questionnaire" [11]. Along with the main personality dimensions, the questionnaire contains a response distortion scale that measures the trend to lie in their responses. A Likert 5-point scale is applied to assess the participant's level of agreement or disagreement with a given statement. Direct scores are calculated for each subdimension subtracting reverse item scores from direct item scores. The result is added to the other subdimension conforming the dimension. For example, dynamism + dominance = extraversion.

Achievement motivation was evaluated with the ML-1 and 2 scales [34], measuring a person's capacity to achieve a long-term goal. Participants are asked about work, social, or academic achievement, putting more emphasis on risk taking in the second scale.

Effortful control was assessed using a short version of the Adult Temperament Questionnaire (ATQ) [36]. This questionnaire measures three subcomponents of effortful control: activation, attentional, and inhibition control.

Intrinsic Motivation. The Intrinsic Motivation Inventory (IMI) questionnaire was applied just before participants carried out the SST and AOSPAN in a previous study [32]. The purpose was to measure the level of motivation during the performance of these two cognitive tasks. This inventory contains five dimensions measuring: a) interest/enjoyment, b) perceived competence, c) value/usefulness, d) pressure/tension, and e) effort exerted during task performance. Fifty-eight participants completed this inventory.

5.1.2.2 Cognitive control measures

They were obtained from the 58 participants taking part in Padilla et al.'s [55] study, using the Automatic Operation Span Task (AOspan) [57] and the Stop Signal Task (SST) [58] to measure working memory and cognitive inhibition, respectively.

5.1.2.3 Cardiovascular fitness measures

Cardiovascular and fitness levels were obtained from Padilla et al.'s [55] study. Maximal oxygen uptake was measured with the Rockport 1-mile Fitness Walking Test [59], which presents a high correlation coefficient (0.88) with a direct index of VO_2max obtained using a treadmill [59, 60]. Total hours of aerobic exercise in the past and present were separately calculated with a weighted average taking into

	Active	**Sedentary**		
Dimensions	***M (sd)***	***M (sd)***	***t (df)***	***p***
Extraversion	81.06 (9.95)	72.12 (11.26)	3.52 (68)	.00*
Dynamism	42.17 (5.40)	37.59 (7.11)	3.04 (68)	.00*
Dominance	38.89 (5.95)	34.53 (6.13)	3.02 (68)	.00*
Affability	87.50 (5.60)	84.03 (9.35)	1.87 (53.39)	.07
Cooperation	45.78 (2.81)	44.29 (5.52)	1.40 (48.37)	.17
Cordialness	41.72 (4.25)	39.74 (5.65)	1.69 (68)	.10
Conscientiousness	83.72 (10.75)	86.88 (12.65)	1.13 (68)	.26
Scrupulousness	38.75 (6.61)	42.24 (8.11)	1.98 (68)	.05
Perseverance	44.97 (5.65)	44.65 (6.53)	.22 (68)	.82
Openness	88.86 (8.90)	85.35 (8.43)	1.70 (68)	.10
Openness Culture	42.86 (5.79)	43.35 (5.43)	0.37 (68)	.72
Openness to Experience	46.00 (4.85)	42.00 (5.33)	3.29 (68)	.00*
Emotional Stability	75.06 (15.60)	63.79 (16.95)	2.90 (68)	.01*
Control of Emotions	38.39 (9.58)	32.15 (8.94)	2.81 (68)	.01*
Control of impulses	36.67 (7.00)	31.65 (8.89)	2.63 (68)	.01*
Distortion	81.06 (9.95)	72.12 (11.26)	1.03 (68)	.31

*Note. p: p values, * significant at the level of p < 0.05.*

Table 3.
Averages (standard deviations in brackets) from Big Five questionnaire dimensions and subdimensions in active and sedentary participants.

	Active	**Sedentary**		
Test	***M (sd)***	***M (sd)***	***t (df)***	***p***
ATQ:				
Activation Control	4.89 (0.76)	4.77 (0.84)	.60 (68)	.55
Attentional Control	4.19 (0.89)	4.10 (1.11)	.37 (68)	.71
Inhibitory Control	4.74 (0.87)	4.13 (1.04)	2.65 (68)	.01*
Total	4.65 (0.63)	4.36 (0.75)	1.75 (68)	.08
ML:				
ML-1	41.81 (4.64)	40.00 (4.47)	.89 (68)	.10
ML-2	31.92 (5.31)	32.47 (4.19)	.16 (68)	.63
IMI:				
Interest/Enjoyment	36.72 (8)	33.93 (7.11)	1.41 (56)	.17
Perceived Competence	27.48 (6.78)	23.79 (6.49)	2.12 (56)	.04*
Effort	29.93 (2.98)	29.62 (3.12)	.39 (56)	.70
Value/Usefulness	21.07 (5.02)	20.72 (4.11)	1.12 (56)	.27
Pressure/Tension	16.71 (5.44)	17.83 (5.78)	.29 (56)	.78

Note. Adult Temperament Questionnaire (ATQ), Achievement Motivation Test (ML), and Intrinsic Motivation Inventory (IMI).

Table 4.
Average, standard deviations per group, and p values in tests measuring different aspects of motivation.

account the weekly hours of aerobic exercise at each period. The weights were the number of weeks that frequency of exercise had been kept for. Total hours of past exercise (performed during their childhood and adolescence) were added to total hours of present exercise (adulthood). Total months along life were also calculated.

5.2 Results

Demographic data (**Table 2**), scores from the Big Five questionnaire (**Table 3**), motivation, and the Adult Temperament Questionnaire (ATQ, **Table 4**) from the active and sedentary groups were compared using independent groups t tests. The groups differed significantly in terms of cardiovascular exercise frequency [t (43.33) = 8.80, p = .00, d = 2.67] and fitness levels [Rockport test; t (66) = 5.82, p = .00, d = 1.43]. Results also showed that sedentary and passive participants did not differ in terms of age [t (68) = .64, p = .53, d = 0.16], years of education [t (66.75) = 1.92, p = .06, d = 0.47] or vocabulary [t (66) = 1.16, p = .25, d = 0.29].

The Big Five averaged scores are presented in **Table 3**. The independent t tests showed that active participants obtained significantly higher scores in extraversion [t (68) = 3.52, p = .00, d = 0.85], subdimensions of dynamism [t (68) = 3.04, p = .00, d = 0.73] and dominance [t (68) = 3.01, p = .00, d = 0.73]. More importantly, active participants obtained significantly higher scores in emotional stability [t (68) = 2.89, p = .01, d = 0.70], control of emotions [t (68) = 2.81, p = .01, d = 0.68] and control of impulses [t (68) = 2.63, p = .01, d = 0.64]. In addition, they were more open to new experiences [t (68) = 3.29, p = .00, d = 0.79]. Active and sedentary participants did not differ in the level of distortion in their responses [t (68) = 1.03, p = .31, d = 0.25].

None of the motivation scales revealed significant differences between active and sedentary participants (p > .09, see **Table 4**), except for perceived competence from the IMI (t *(56)* = 2.12, p = 0.04, d = 0.57).

When analyzing the ATQ (see **Table 4**), results revealed that groups differed significantly in the inhibitory control subscale [t (68) = 2.65, p = .01, d = 0.64], showing that active participants had a higher inhibitory control than sedentary participants. Activation, attentional and total control did not differ significantly between groups (all p > .08).

Further analyses revealed an absence of correlation between cognitive inhibition (measured by the SSRT from the Stop Signal Task) and inhibitory control (effortful control from the Adult Temperament Questionnaire), emotional stability, control of emotions, or control of impulses (Big Five Questionnaire, p > .05). However, significant correlations were observed between AOSpan (working memory) performance and inhibitory control (r = .28, p = .04) and the personality subdimension control of impulses (r = .32, p = .01).

Regression analysis between control of impulses and AOSpan was carried out, as the resulting correlation index was higher than the one between AOSpan and Inhibitory control. Inhibition control was excluded from the regression analysis since it correlated with control of impulses and collinearity assumption was not met. A significant regression equation was found [F (1, 56) = 6.45, p = *.01*], with an R^2 = .10, indicating that control of impulses explains 10% of the variance of the AOSpan score.

6. Discussion

The aim of the present chapter was to make an overview about the literature investigating how personality traits, motivation, and self-regulation might differ

between physically active and sedentary participants. These factors might relate to each other and being associated to cognitive control, and eventually, to physical activity adherence. The results of a study where these factors were explored were included to put this research topic in context.

According to recent reviews [14, 16, 17] extraversion, neuroticism, and conscientiousness are personality traits highly associated with frequency of physical activity. Openness is also associated, but in a smaller degree. Individuals who are extrovert are in search of sensory and social stimulation, which implies being more involved in physical activities. Additionally, low levels of neuroticism are related to low awareness of autonomic responses and therefore, to higher tolerance to high intense internal or external sensations. The increased arousal caused by high intensity physical exercise might be perceived as something negative by individuals scoring high in neuroticism. On the other hand, conscientious people are able to perseverate and self-regulate their behavior to achieve their self-imposed goals. They feel competent when they achieve their objectives. Moreover, individuals who are open to new experiences enjoy spending more hours doing both physical and non-physical activities. Furthermore, achievement motivation and self-regulation might, in addition, explain physical activity adherence. It has been shown [21–24] that individuals with high cognitive control self-regulate themselves better and keep training for longer periods of time.

The results found in our study were in line with the literature (see for example [16, 17]). We found that active participants were more extroverted or energetic than sedentary participants, suggesting that active participants tend to show a more positive mood, are more dynamic, and able to assert themselves in their personal relationships. Active participants also displayed higher scores in emotional stability and were more open to new experiences. As expected, active and sedentary participants also differed in self-regulation, specifically in inhibitory control, where active participants presented with better control of positive and negative emotions and physiological reactions. However, groups did not differ in achievement motivation, except for perceived competence during task performance (AOspan), which was higher in the physically active group.

The fact that active participants controlled better their reactive emotions and showed a personality pattern characterized by low neuroticism and high positive emotions, along with a tendency for seeking new experiences, characterizes physically active people as persons with high self-regulation levels according to Evans and Rothbart's [36] predictions. Nevertheless, contrary to such predictions, active people, although more self-regulated, were not characterized as more conscientiousness (i.e., more reflexive, perseverant, meticulous, and organized) than sedentary participants. This could be related to the fact that most participants were university students and good organization skills are required to reach that academic level. The absence of a difference between groups in conscientiousness suggests that this trait did not determine differences in performance on cognitive tests. Thereby, the low degree of neuroticism of physically active participants along with positive affect might result in more constructive strategies that motivate them to keep trying until achieving the task goal.

When the relationship between cognitive control (AOspan and SST), inhibitory control (ATQ, self-regulation), and personality traits were explored in our study, it was shown that working memory capacity (AOspan) correlated positively with inhibitory control and control of impulses (variables in which active participants obtained higher scores). Control of impulses explained 10% of the working memory variance. Hence, differences in inhibitory control and control of impulses could have contributed to the AOspan performance in Padilla et al.'s [55] study.

Finally, physically active participants showed greater self-regulation and better cognitive control than the sedentary group. This is compatible with Rueda &

Rothbart's study ([61], see also [39] or [43]) suggesting that better self-regulation contributes to better cognitive control.

Additional studies will be necessary to corroborate whether self-regulatory capacity is one of the main factors contributing to better executive functions in studies about chronic exercise, or whether it is a combination of greater exercise practice and higher self-regulation which leads to higher cognitive control. As mentioned before, aerobic exercise interventions on psychiatric disorders [62] have suggested that exercise may be a way of improving emotional control and self-regulation [63].

7. Conclusion

To conclude, extraversion, neuroticism, conscientiousness, and openness are personality traits associated with higher levels of physical activity. Self-regulation also has an important role on keeping routines of physical exercise. When these factors were tested in our study, active participants showed higher inhibitory control, emotional stability, and more positive mood than sedentary participants. Control of impulses was highly associated with scores in working memory (AOspan) [55]. Therefore, our findings suggest that personality and self-regulation contributed to the effect of exercise on working memory observed in Padilla et al.'s study [55]. In future studies, it will be necessary to investigate the causality between self-regulation and exercise further to better understand the direction of the effects between them.

These findings are positive in the sense that help health providers to design programs to promote physical activity. These programs should consider participant's personality traits and self-regulation capacities. Exercise interventions may target modifying these aspects in parallel with the physical exercise program. An example of this might be designing a physical activity program where individuals exercise always with more people belonging to the same group. The inclusion of a sport coach to set schedules and short and long-term objectives to accomplish as an individual and as a group might be helpful to potentiate conscientiousness and self-regulation. The coach must reward the group every time they achieve their objectives. Other leisure activities may be offered at the same time to stimulate extraversion and openness.

Acknowledgements

We thank Gloria García de la Banda and Jaume Rosello for their help with selecting the questionnaires and scales used in our study.

Conflict of interest

The authors declared that they have no conflict of interest.

Notes/Thanks/Other declarations

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article. This study was part of the corresponding author's doctoral thesis. The authors were supported by a research grant with code PSI2010-21609-C02-02. The corresponding author was granted with a FPI predoctoral studentship coded BES-2011-043565. The coauthor also receives support from PSI2016-75484-R.

DOI: http://dx.doi.org/10.5772/intechopen.99738

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