González-García, H.1; Martínez-Martínez, F.D. (202x) Locus of Control Profiles in Athletes: Relationship with Anger and Hardiness. Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte vol. X (X) pp. xx. Http://cdeporte.rediris.es/revista/___*

ORIGINAL

PERFILES DE LOCUS DE CONTROL EN DEPORTISTAS: RELACIÓN CON IRA Y PERSONALIDAD RESISTENTE

LOCUS OF CONTROL PROFILES IN ATHLETES: RELATIONSHIP WITH ANGER AND HARDINESS

González-García, H.[1]; Martínez-Martínez, F.D.[2]

[1] Doctor en Educación y Ciencias del Deporte. Profesor en la Facultad de Educación en la Universidad Internacional de La Rioja (UNIR). La Rioja (España) higinio.gonzalez@unir.net
[2] Licenciado en Psicopedagogía y Maestro Especialista en Educación Física. Maestro en la Consejería de Educación de la Región de Murcia. Murcia (España) fdaniel.martinez@um.es

Spanish-English translator: Inmaculada Camarena Gimeno, inmacamarenatrad@gmail.com

Código UNESCO / UNESCO Code: 6199 Otras Especialidades de la Psicología (Psicología del Deporte) / 6199 Other Psychological Specialities (Sports Psychology).
Clasificación del Consejo de Europa / Council of Europe Classification: 15 Psicología del Deporte / Psychology of Sport

Recibido 10 de septiembre de 2021 **Received** September 10, 2021
Aceptado 20 de marzo de 2022 **Accepted** March 20, 2022

ABSTRACT

The study aimed to identify the locus of control profiles in athletes and examine whether participants from distinct profiles significantly differed on anger and hardiness. The sample was made up of 383 athletes (M*age* = 28.14; *SD* = 9.42) that completed a series of self-report questionnaires designed to measure: locus of control (E I-E), anger (STAXI-II) and hardiness (EPRM). Cluster analysis revealed two distinct profiles. Results of follow-up ANOVAs showed significant differences in temperament, reaction, internal anger expression, external anger expression, external anger control, commitment, challenge, control and hardy personality general factor. The low external locus of control profile reported the lowest anger levels and the highest hardiness levels. In conclusion, two locus of control external profiles emerged from the cluster

analysis, in which the low external locus of control profile turned out to be the most functional profile.

KEYWORDS: profiles, cluster analysis, locus of control, competitors.

RESUMEN

El estudio tuvo como objetivo identificar perfiles de locus de control en deportistas y examinar su relación con la ira y personalidad resistente. La muestra fue de 383 deportistas (M*edad* = 28.14; *DT* = 9.42) que completaron una serie de cuestionarios para medir: locus de control (E I-E), ira (STAXI-II) y personalidad resistente (EPRM). El análisis de conglomerados reveló dos perfiles distintos. Los análisis de ANOVA mostraron diferencias significativas en temperamento, reacción, expresión interna de ira, expresión externa de ira, control externo de ira, compromiso, desafío, control y el factor general de personalidad resistente. En este sentido, el perfil de locus de control externo bajo reportó los niveles más bajos de ira y niveles más altos de personalidad resistente. Como conclusión, del análisis de conglomerados surgieron dos perfiles de locus de control externo, de los cuales el perfil de locus de control externo bajo resultó ser un perfil más funcional.

PALABRAS CLAVE: perfiles, análisis de conglomerados, locus de control, competidores.

INTRODUCTION

Several previous studies have focused on the psychological factors that negatively or positively influence sports performance (Abdullah, Musa, Maliki, Kosni & Suppiah, 2016; Andersen, Ottesen & Thing, 2019; Gómez & Sánchez, 2019; Lee, So & Lee, 2021; Mahamud, Tuero & Márquez, 2007). Subsequently, stress, motivation, self-confidence, anxiety, goal setting and concentration, stand out as some of the most crucial factors (Berengüí et al., 2013; Ruiz & Salinero, 2012). Nevertheless, another psychological variable that influences sports performance is the locus of control (Bang, Chang, Lee, Kim & Taliaferro, 2019). Locus of control is a psychological concept capturing individuals' beliefs about the extent to which they control the events that affect them (Rotter, 1966). Those with an external locus of control generally attribute life's outcomes to external factors (e.g. fate, luck, other people, etc.) while those with an internal locus of control believe that much of what happens in life stems from their actions (Gatz & Karel, 1993). In this study, Rotter's (1966) model was followed, due to its extensive career in the locus of control research (Cobb-Clark, Kassenboehmer & Sinning, 2016). This model establishes five factors for the external locus of control (Ferrando, Demestre, Anguiano-Carrasco & Chico, 2011): luck in general (SG), political control (CP), success via personal initiative (EIP), interpersonal control (CI) and academic control (CA). Within the research between locus of control and physical activity, external locus of control is

negatively related to performance in sports. On the other hand, an internal locus of control is related to the predisposition to do physical activity (Guszkowska & Kuk, 2012; Huang, Liu, Chang, Hsieh & Lu, 2019; Lee, So & Lee, 2021; Mohammad & Paul, 2019).

The locus of control is shown as an internal factor of the athlete, which influences the levels of anger and aggressiveness (González-García, Pelegrín & Garcés de Los Fayos, 2017). Athletes with higher levels of external locus of control show greater levels of aggressiveness, anger, and more violent and unsportsmanlike behaviors (González-García, Pelegrín & Carballo, 2017; Page & Scalora, 2004; Wallace, Barry, Zeigler-Hill & Green, 2012). Conversely, athletes with a higher internal locus of control possess a greater inhibition of aggressive behaviors (Page & Scalora, 2004; Wallace et al., 2012). Similarly, Deter, Treviño and Sweitzer (2008) and in another research Tsai, Wang and Lo (2014) showed that people who had a higher external locus of control reported higher levels of moral disconnection. As such, people with higher levels of moral disconnection tend to be involved in more aggressive actions (Caprara, Fida, Vecchione, Tramontano & Barbaranelli, 2009; Hyde, Shaw & Moilanen, 2010; Yang & Wang, 2012). Likewise, in another research carried out by Wallace et al. (2012), it could be concluded that the locus of control is manifested as an important modulating variable of self-esteem and aggression. Thus, low self-esteem is associated with higher levels of aggressiveness in individuals with an external locus of control.

Therefore, as an innovation of this research, different profiles of external locus of control in the athletes' sample are going to be analyzed. Furthermore, in this way, the multivariate nature of the distinct external locus of control factors and the possibility of a diverse combination of these variables in athletes will be understood. On the other hand, the division of the sample into external locus of control profiles is an opportunity to know how the profiles are distributed in a group of athletes. Moreover, it is an opportunity to do not focus the different statistical analyzes on those profiles with more extreme scores according to the sample (González-García et al., 2017; Page & Scalora, 2004; Wallace et al., 2012).

Hardiness has been considered as an important mediating factor in the modification of the perceptions of stressful stimuli, making them cognitively less threatening and reducing the response to stress and associated disorders (Eschleman, Bowling & Alarcon, 2010; Fyhn, Konglevoll & Johnsen, 2016). In fact, the most resistant athletes make more positive and less threatening interpretations of stressors (González-García & Pelegrín, 2020). Consequently, the athletes, according to affective and psychophysiological responses, show less negativity and dysfunction. At a sports level, this generates some advantages, such as maintaining self-confidence and anxiety and activation levels at the optimal point (Eschleman et al., 2010; Fyhn et al., 2016). Hence, hardiness or also known as Hardy personality is a multidimensional psychological variable that protects those who have it from stress effects (Eschleman et al., 2010; Matthews, Lin & Wohleber, 2017). In this research, the

hardiness model suggested by Kobasa, Maddi & Kahn (1982) has been followed. This model is divided into three factors: control, commitment and challenge, adding an overall factor of hardiness. According to this, the model proposed by Kobasa, Maddi and Kahn (1982) realizes that the commitment component is based on the tendency to get involved or committed to all the activities that a person carries out in the different areas of life (work, social institutions, interpersonal relationships, family and oneself); the control component is linked to the feeling of controllability or personal influence on the events that a person experiments in life; and the challenge component is referred to the belief that change, and not stability, is a common, essential and necessary characteristic in life. Thus, the negative impact, when a stressful event appears, will be reduced and the harmful consequences for the individual will be minimized. This will be produced if the change is interpreted as a positive challenge, an opportunity and an innovative incentive for personal growth and not as an alienating, crushing and undesirable aspect that can constitute a threat to security.

Notwithstanding, research that analyzes hardiness and locus of control confirmed the existence of an inverse connection between these two variables (Jafari, Sohrabi, Jomehri & Najafi, 2009; Ortega, Ortiz & Martínez, 2014). However, their connection with sports performance is positive. Hence, Maddi and Hess (1992) discovered a positive connection between hardiness and performance or efficiency in basketball. In this research, the highest performance players presented higher levels of hardiness. In another study, Golby and Sheard (2004) investigated if personality types and cognitive abilities could predict success in rugby players from different leagues. It was found that players who participated in top leagues presented higher levels of control, obligation and defiance than the rest of the players. In addition, similar results were found in a group of marathoners in a study carried out by Jaenes, Godoy-Izquierdo and Román (2008). The authors appreciated that the athletes with better results had better levels of hardiness.

In an investigation carried out by Ramzi and Besharat (2010), the impact of hardiness was measured according to sporting achievement and mental health. The results showed that hardiness was connected to sporting achievement and psychological wellbeing. Rezae, Ghaffari and Zolfalifam (2009) found a positive relation between team cohesion, hardiness and sporting performance. It demonstrated that athletes who were champions had higher levels of hardiness and team cohesion in comparison with athletes who were not champions. In an investigation by Sheard and Golby (2010), differences in hardiness levels of athletes who play in different stages were analyzed. The results revealed that international competitors obtained better marks in commitment and endurance in comparison with national athletes and others. These findings showed the existence of a psychological profile for elite athletes, according to their hardiness levels and low-level athletes. Contrary to the previous studies, De la Vega, Rivera and Ruiz (2011) did not find differences in sporting performance and hardiness levels in ten kilometer runners and sky running. In turn, these athletes obtained high hardiness scores.

Anger can also interfere with performance through interruption or increased attention, information processing and decision making, execution and, finally, performance control (Jones, 2003; Wittmann, Arce & Santiseban, 2008). Anger has been previously identified as an emotion that can impact performance either positively or negatively, (Lane, Davis & Stanley, 2014). For instance, anger is a high-arousal emotion (Latinjak, López-Ros & Font-Lladó, 2015), and therefore potentially beneficial in gross tasks requiring effort, power or endurance, and potentially disadvantageous in a fine task requiring accuracy and precision (Jones, Lane, Bray, Uphill & Catlin, 2005). Moreover, anger is deemed to deserve special attention in other cognitive research areas such as judgment or decision making (Lerner & Tiedens, 2006). From a differential emotion theory perspective, anger would be defined as an emotion comprising high arousal (Kaufman, 1970) that results from an event perceived to be a "demeaning offense against me and mine" (Lazarus, 2000, p. 234). From a dimensional perspective, the term anger is used to describe states characterized by negative valence, high arousal, and a retrospective perspective (Fontaine, Scherer, Roesch & Ellsworth, 2007; Latinjak, 2012; Latinjak, Cook & López-Ros, 2013). Anger is a primary, normal, universal, and adaptive emotion that all people experience in their daily lives. In this sense, it could be defined as: "an experiential state of an affective-subjective nature of negative valence, which varies in intensity from mild irritation, moderate anger, to intense fury or rage and that occurs when it is perceived that the achievement of their objectives or goals has been impeded, or something unjust has undeservedly happened (Del Vecchio & O´Leary, 2004; González-García et al., 2017).

The relationship between anger and performance in sports has sparked the interest of scientific research in the last decade (Davis, 2011). Initially, it was believed that there was no influence of anger on sports performance (Jones, 1993). However, the evidence that anger affects sports performance and other related variables has been proved later by numerous scientific works (Parrott, 2001; Ring, Kavussanu, Al-Yaaribi, Tenenbaum & Stanger, 2019; Tamir, Mitchell & Gross, 2008; Woodman et al., 2009). In the case of combat sports and rugby, anger can become a facilitator of sports performance (Robazza & Bortoli, 2007; Ruiz & Yuri, 2011). In this type of sports, this aggressiveness is interpreted as an impulse or extra energy that favors their abilities (Oliva-Mendoza, Calleja & Hernández-Pozo, 2010), But in these sports, the increase in energy experienced by anger (Hanin, 2007; Martinent & Ferrand, 2009), could be valued as a facilitator of sports practice due to the high physical component they present (Robazza & Bortoli, 2007). Moreover, in more technical sports an energy surplus could lead to both a poor level of performance and a high level of performance, depending on the characteristics of the situations (Hanton, Jones & Mullen, 2000). In other words, athletes could interpret their anger as facilitating when they appreciate that the excess of energy caused by anger was under their control, and as debilitating when they appreciate that they could not control this excess energy produced by the experience of anger (Martinent & Ferrand, 2009). On the other hand, the experience factor in the

competition is shown as a facilitator in the anger-performance relationship (Davis, Woodman & Callow, 2010). Therefore, Robazza and Bortoli (2007) found that the experience of the players moderated the frequency of the experienced feelings of anger, and in turn, increased the perception of anger as a performance facilitator. On the other hand, in a study that related anger with high-performance combat sports athletes, it was found that contact athletes who competed internationally revealed lower levels of anger than those who practiced sport regularly and non-athletes (Menéndez-Santurio & Fernández-Río, 2015). On the contrary, González-García, Pelegrín and Trinidad (2019), concluded that there are no differences in anger levels between professional table tennis players and amateurs.

As a novelty of this work, it is intended to examine the number of locus of control profiles and their influence on anger variables and hardiness. To date in the present work, it was not found previous studies that have examined the influence of locus of control in the cited variables, neglecting the multivariate experience of locus of control in athletes and their outcomes in anger and hardy personality variables. Once it was established the theoretical framework of this work and it was seen that there was no previous research that carried out the person-centered approach of this study: the aims of the study were to identify the locus of control profiles in athletes and examine whether participants from distinct profiles significantly differed on anger and hardiness. Based on previous experiences grounded on a bivariate approach (González-García et al., 2017; Jafari et al., 2009; Page & Scalora, 2004; Ortega et al., 2014; Wallace et al., 2012), It was hypothesized that the profile with the highest scores of external locus of control will be the worst adjusted in terms of anger and hardy personality.

MATERIAL & METHODS

Participants

The sample was made up of 383 athletes (M*age* = 28.14; *SD* = 9.42; 277 men and 106 women). Regarding participants, 45 were professionals (11.7%) and 338 were amateurs (88.3%). Concerning sport success, 41 reached international successes (10.7 %) and 137 reached national successes (35.8%). On the other hand, most athletes compete at regional events (*n* = 195; 50.9%) and at national competitions (*n* = 137; 35.8%). Concerning the time of sport practice per week, the mean of the athletes that took part in the study was 2.44 hours per week (*SD* = 6.70). The most frequents sports among participants were: running (*n* = 39; 10.2%), Cycling (*n* = 40; 10.4%), Football (*n* = 34; 8.9%), Table Tennis (*n* = 33; 8.6%), Swimming (*n* = 23; 6%) and Futsal (*n* = 21; 5.5%).

As an inclusion criterion, it was selected only athletes that take part in whatever sport modality and athletes older than 18 years old, since it was intended to examine the variables studied in athletes who had already passed the initial training phases and thus be able to detect dysfunctional/functional profiles in

competitive athletes. The cited population was selected according to the research objectives.

Instruments

External Locus of Control. For the measurement of the external locus of control, the Locus of Control Scale (Rotter, 1966) was used. Adaptation to the Spanish context of Ferrando et al. (2011). The version consists of 29 items, 6 of which are included as a control item. The subject chooses between the two options of each item the one that best suits their way of thinking. All non-control items have an option that indicates a more external and internal attributional style (internalism versus externalism). The scale is grouped into the following factors: Academical Control (3 items; α = .45), General Luck (6 items; α = .51), Political Control (5 items; α = .58), Interpersonal Control (4 items; α = .50) and Personal Initiative Success (4 items; α = .53). In this research to work out the reliability, the mean inter-item correlation was used, because Cronbach's alpha increases with the number of items. Besides, as we have taken the different subfactors, the questionnaire is smaller than the whole scale (Sijtsma, 2009; Yang & Green, 2010). Therefore, in line with the cited works (Sijtsma, 2009; Yang & Green, 2010) we have worked out the raw mean inter-item correlation as a statistical marker of internal consistency. Clark and Watson (1995) offered a rule of thumb that recommends that average inter-item correlation have to range from 0.15 to 0.50. Therefore, the means inter-item correlation for “general luck”, “political control”, “interpersonal control”, “academical control” and “personal initiative” were .16, .24, .20, .21 and .19 respectively.

Anger was assessed through the State-Trait Anger Expression Inventory (STAXI-2) in the Spanish reduced version (Spielberger et al., 2001). The STAXI-2 is a 49-items survey that measures the intensity of anger as an emotional state (State Anger; 15 items) and the disposition to experience angry feelings as a personality trait (Trait Anger; 34 items). Regarding that sub-scales, in the present work was taken the trait anger sub-scale, which contains the following factors: Anger trait, External anger expression, Internal anger expression, Temperament, Anger reaction, Internal anger control, External anger control, internal anger expression and external anger expression. The anger trait scale showed the enough reliability in their original version (Spielberger et al., 2001) as well as in the present work: temperament (5 items; α = .85), reaction (5 items; α = .75), internal anger control (6 items; α = .80), external anger control (6 items; α = .80), internal anger expression (6 items; α = .69) and external anger expression (6 items; α = .60).

Hardy Personality. The Marathon Hardy Personality Scale (EPRM) was used for its measurement (Jaenes et al., 2008). Concerning that scale, it was adapted to all sports modalities. The Marathon Hardy Personality Scale (EPRM) has a Likert format with 4 alternatives response, from 0 = "strongly disagree" to 3 = "strongly agree". The EPRM is divided into three factors: control (10 items; α = .61), commitment (10 items; α = .66) and challenge (10 items; α = .62). The instrument obtained a Cronbach´s alpha of .74 for this sample of athletes on the

whole scale. Moreover, previous studies in Spanish athletes have taken that scale as a valid tool to measure hardiness in sports context (De la Vega et al., 2010; Jaenes et al., 2009).

Acquiescence and dishonest participants. The Oviedo scale of infrequency response was used (INF-OV; Fonseca-Pedrero, Lemos-Giráldez, Paino, Villazón-García & Muñiz, 2009). The survey is made up of 12-item in a self-report measure with a 5-point Likert-type rating scale format (1 totally disagree; 5 totally agree). This measure aims to detect participants who responded randomly, pseudo-randomly or dishonestly on self-reports (e.g., "Have you seen someone with glasses?"). Participants with more than 4 incorrect answers were taken out of the sample. In this study, 10 participants were deleted from the sample. Furthermore, previous articles presented the accuracy of this scale in the detection of dishonest participants (González-García et al., 2019; González-García et al., 2018).

Procedure

The research was carried out following international ethical guidelines and anonymity was preserved. Athletes were contacted in clubs and asked to fulfill an online anonymous survey. Also, athletes were contacted online through federations and athletes' forums. Once they accepted to participate, they began to complete the whole survey. Moreover, athletes were informed of the data treatment, singing and informed consent which was at the beginning of the study. Concerning the filling process, the full survey takes thirty minutes and during the filling process, they had to respond to the acquiescence questions of INF-OV Scale, which was a measure used to ensure that participants responded honestly.

Statistical Analyses

The SPSS 20 version software was the tool used to perform the different analyses of the study. Firstly, to ensure that the instruments and variables were fitted it was worked out reliability analysis of scales. Secondly, to analyze locus of control standardized scores hierarchical and no hierarchical analyses were performed (Yim & Ramdeen, 2015). To calculate the cluster groups Ward's linkage method with squared Euclidian distance was followed. Then, a k means cluster analysis was performed using the most appropriate cluster solution identified in stage one. Thirdly, to analyze locus of control cluster group differences in anger and hardy personality variables a MANOVA was performed. The confidence interval established was 95%. Besides, Bonferroni adjustment ($p < .005$ for psychological variables) was worked out to prevent Type I error a significant multivariate effect ($p < .05$) in ANOVAs analyzes. The effect size was worked out through the Partial Eta squared (η^2) to measure the magnitude of the differences found on ANOVA. Finally, to ensure if there were sociodemographic cluster covariation a series of chi-square tests were conducted with qualitative variables: Gender, level of competition (international,

national and other levels) and level of success (international, national and other levels).

RESULTS

Locus of Control Profiles

The agglomeration schedule coefficient and the dendrogram revealed two clusters which were the most convenient solution. The non-hierarchical procedure reported the hierarchical one as two clusters were almost identical within both methods. A MANOVA analysis was conducted to detect significant multivariate effects between the three clusters on the anger dimensions (Wilk's Lambda = 0.40, F (5) = 112.83, $p < 0.001$, $\eta^2 = 0.59$). Subsequent ANOVAs indicated significant differences ($p < 0.001$) in all locus of control dimensions, providing evidence for the tenability of the cluster solution. The combination of locus of control cluster is: (a) a low external locus of control profile, showing low scores on Academical Control, General Luck, Political Control, Interpersonal Control and Personal Initiative Success; (b) a high external locus of control profile with high scores on Academical Control, General Luck, Political Control, Interpersonal Control and Personal Initiative Success.

Table 1. Standardized scores of locus of control in each cluster.

	(a) Low external locus of control group (*n*=254) M (*SD*)	(b) High external locus of control group (*n*=129) M (*SD*)	F (112.83)	*p*	Eta ^{2}	Cronbach *a*	Mean Inter-Item Correlation
Academical Control	-.41 (.70)	.69 (1.08)	492.06	.00**	.56	.45	.21
General Luck	-.34 (.85)	.57 (.95)	1195.27	.00**	.75	.51	.16
Political Control	-.37 (.87)	.72 (.82)	1321.28	.00**	.77	.58	.24
Interpersonal Control	-.41 (.85)	.69 (.88)	1794.73	.00**	.82	.50	.20
Personal Initiative Success	-.10 (.95)	.21 (1.06)	1243.85	.00**	.76	.53	.19

Note. **$p < .01$

Cluster group differences in hardiness and anger

Results of MANOVA (Wilk's Lambda = .91, F (9) = 5.00, $p < .001$, $\eta^2 = .99$) indicated significant differences across clusters on athlete's hardiness and anger. Results of follow up ANOVAs showed significant differences (Bonferroni correction, $p < .005$) on temperament ($p < 0.01$), reaction ($p < 0.01$), internal anger expression ($p < 0.01$), external anger expression ($p < 0.01$), external anger control ($p < 0.01$), commitment ($p < 0.01$), challenge ($p < 0.01$), control ($p < 0.01$) and hardy personality general factor ($p < 0.01$). In all the variables,

cluster one was the profile that reported the lowest anger levels and the highest hardiness levels.

Table 2. Cluster Differences in anger and hardiness based on external locus of control profiles.

Variables	(a) Low external locus of control group (*n*=254) M (*SD*)	(b) High external locus of control group (*n*=129) M (*SD*)	F (4.19)	*p*	*Eta*^{2}	Cronbach *a*
Temperament	8.24 (2.88)	9.37 (3.32)	16.36	.00*	.03	.85
Reaction	12.82 (3.05)	14.33 (3.19)	18.02	.00*	.03	.75
Internal anger expression	13.25 (3.50)	14.62 (3.59)	14.80	.00*	.02	.80
External anger expression	10.99 (2.88)	12.27 (2.76)	15.85	.00*	.03	.60
Internal anger control	16.51 (3.90)	16.20 (4.22)	2.08	.15	.01	.80
External anger control	20.05 (3.25)	18.79 (3.46)	12.36	.00*	.02	.80
Commitment	23.08 (3.58)	21.95 (3.80)	16.06	.00*	.03	.66
Control	22.71 (2.82)	21.75 (3.12)	16.35	.00*	.03	.61
Challenge	18.11 (3.79)	17.09 (4.10)	10.52	.00*	.02	.62

Cluster Group Differences in Demographic Variables

Results of Chi-square tests showed no significant differences ($p > .05$) across local level of competition (χ^2 (1) = .21), national level of competition (χ^2 (1) = .03; $p > .05$) and international level of competition (χ^2 (1) = 4.12; $p > .05$). Also, Chi-square tests showed no significant differences ($p > .05$) across local successes (χ^2 (1) = .12), national successes (χ^2 (1) = .01; $p > .05$) and international successes (χ^2 (1) = .32; $p > .05$). However, results of Chi-square tests showed differences in genders: women and men (χ^2 (1) = 6.19; $p < .05$), in which men belonged more to profile (a) (n = 194).

DISCUSSION

The study aimed to identify the locus of control profiles in athletes and examine whether participants from distinct profiles significantly differed on anger and hardiness. Regarding the combination of profiles, cluster analysis revealed two distinct profiles: (a) a low external locus of control profile, showing low scores on Academical Control, General Luck, Political Control, Interpersonal Control and Personal Initiative Success; (b) a high external locus of control profile with high scores on Academical Control, General Luck, Political Control, Interpersonal Control and Personal Initiative Success. The combination of external locus of control factors in the profiles signifies the multivariate experience of locus of control factors (Academical Control, General Luck, Political Control, Interpersonal Control and Personal Initiative Success).

Furthermore, these combinations of profiles shed light to show that a bivariate approach is missing relevant information on the way to understand the external locus of control (Ferrando et al., 2011), due to the possible coexistence of several locus of control variables at the same time (Academic Control, General Luck, Political Control, Interpersonal Control and Personal Initiative Success). Therefore, following a person-centered approach, two profiles of external locus of control were found in athletes with different combinations in the distinct locus of control factors (Academic Control, General Luck, Political Control, Interpersonal Control and Personal initiative Success).

Regarding the aim of examining whether participants from distinct profiles significantly differed on anger and hardiness, the outcomes obtained revealed significant differences across clusters on temperament, reaction, internal anger expression, external anger expression, external anger control, commitment, challenge, control and hardy personality general factor; in favor of (a) low external locus of control group that was the one that reported the lowest anger levels and the highest hardiness levels. These results confirm the previous hypothesis that reveals the benefits of having lower levels of external locus of control (Page & Scalora, 2004; Wallace et al., 2012). Results provided that (a) low external locus of control group emerged with the lowest levels of anger variables (temperament, reaction, internal anger expression, external anger expression, external anger control) and the highest levels of hardiness (commitment, challenge, control). Consequently, the hardiness levels and anger levels are according to previous studies that showed the benefit of low anger levels and high hardiness on sports performance (Eschleman et al., 2010; Fyhn et al., 2016). Besides, these outcomes support the idea that (b) high external locus of control group could be dysfunctional in terms of sports performance in this sample of athletes. As it is pointed out by previous research (Hanton et al., 2000; Martinent & Ferrand, 2009; Ramzi & Besharat, 2010) that show that higher anger levels and low hardy personality levels can lead to poorer performance. Therefore, (b) high external locus of control group could represent a dysfunctional profile from a person-centered approach.

Concerning covariation among clusters, results reveal significant differences between clusters in the variable gender, but the rest of the sociodemographic variables did not report differences (local level of competition, the national level of competition, international level of competition, local successes, national successes and international successes). These outcomes contradict those studies (Bang et al., 2019; González-García et al., 2017; Page y Scalora, 2004; Wallace et al., 2012) that found out differences in locus of control levels depending on the sport performance following a non-person-centered approach. Therefore, in that research following a person-centered approach were not found differences among variables related to sports performance (local level of competition, the national level of competition, international level of competition, local successes, national successes and international successes) and locus of control profiles. The non-existence of these differences may be determined by the methodology used in previous studies that focused on a bivariate approach in which the external locus of control scores are examined centered on the

subjects with extreme scores. This means that following this approach in which different profiles of external locus of control can coexist in the same person, there may be no differences between sports performance and external locus of control. For this reason, it is necessary to continue expanding the scientific literature that examines the external locus of control through profiles, since this would help to know reliably how this variable behaves in athletes in a contextualized way.

As practical implications, regarding that the present study did not report differences among sports performance and the external locus of control profiles, it should be taken into consideration the measure of locus of control following a multivariate perspective that can summarize outcomes in different profiles. Mostly, when a remarkable number of previous research showed that there was a connexion among sports performance level and external locus of control (Bang et al., 2019; González-García et al., 2017; Page & Scalora, 2004; Wallace et al., 2012), but all of those studies were focused on a bivariate approach that could be a limitation to generalize these previous outcomes, regarding our results. Furthermore, this multivariate focus can provide a meaningful and parsimonious way to clarify the relationship with the previously mentioned variables (Ferrando et al., 2011). Besides, the combination of profiles reported in this study can help sports psychologists on the way to understand the external locus of control and its behavior among profiles of athletes. Even, the combination in profiles can clarify those athletes that can be at risk to suffer maladaptive outcomes such as low hardiness levels and high anger levels which are the variables examined in this study. In addition, this classification in profiles can help the psychologist to created interventions and divide the intervention program into the aforementioned profiles which can be a helpful strategy to summarize the intervention with those athletes at risk.

As limitations of this research, it should be taken into account that the use of self-report questionnaires has some memory bias, acquiescence troubles and social desirability. To detect acquiescence the Oviedo Scale (INF-OV; Fonseca-Pedrero et al., 2009) was used to ensure the reliability of the participants that fulfilled the online survey. Furthermore, the Locus of Control Scale of Rotter (1966) also contained control items to detect acquiescence. On the other hand, another limitation that may occur due to the fulfillment of the online questionnaire is the non-existence of a response time. This limitation can lead to the person taking the questionnaire losing concentration by leaving the questions pending for later. On the other hand, another limitation arises from the need to replicate the study in other samples with other sports modalities to ensure that the results evolve as in the present study. Finally, the results of this work have to be understood from the profiling methodology approach, when making comparisons with other types of approaches in which the same variables are examined.

In conclusion, two locus of control external profiles emerged from the cluster analysis, one characterized by a low level of external locus of control with high levels of hardiness, and another profile characterized by a high external locus of

control levels and with high anger levels and low hardiness. The (a) low external locus of control group reported the better outcomes related to sports performance, owing to their low external locus of control combination of variables and its evolving in low anger levels and high hardiness. Otherwise, (b) high external locus of control group emerged as a possible dysfunctional profile that can turn out to be maladaptive. Even though, this research contradicted previous works that pointed out that there are differences in athletes' sports performance level and locus of control. Nevertheless, all those previously cited works, followed a non-person-centered approach, neglecting the multivariate experience of external locus of control. As a whole, cluster profile analysis can work as a strategy to order athletes at risk in order to make target interventions to reduce the levels of external locus of control. In addition, results from the present study should be taken into consideration to develop a psychological intervention with athletes at risk of having a high external locus of control combination.

REFERENCES

Abdullah, M. R., Musa, R. M., Maliki, A. B. H. M. B., Kosni, N. A. & Suppiah, P. K. (2016). Role of psychological factors on the performance of elite soccer players. *Journal of Physical Education and Sport, 16*(1), 170. https://doi.org/10.7752/jpes.2016.01027

Andersen, M. H., Ottesen, L. & Thing, L. F. (2019). The social and psychological health outcomes of team sport participation in adults: An integrative review of research. *Scandinavian Journal of Public Health, 47*(8), 832-850. https://doi.org/10.1177/1403494818791405.

Bang, H., Chang, M., Lee, C., Kim, S. & Taliaferro, A. (2019). Sport participation, locus of control, and academic performance among early adolescents: Racial and linguistic status differences. *Sociological Spectrum, 39*(1), 20-39. https://doi.org/10.1080/02732173.2018.1564098

Berengüí, R., García-Pallarés, J., López-Gullón, J. M., Garcés de Los Fayos, E. J., Caravaca, E. C. & Martinez-Abellán, A. (2013). Fundamental psychological skills in olympic wrestling. *Cuadernos de Psicología del Deporte, 12*(2), 19-22.

Caprara, G. V., Fida, R., Vecchione, M., Tramontano, C. & Barbaranelli, C. (2009). Assessing civic moral disengagement: Dimensionality and construct validity. *Personality and Individual Differences, 47*(5), 504–509. https://doi.org/10.1016/j.paid.2009.04.027

Clark, L. A. & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309–319. https://doi.org/10.1037/1040-3590.7.3.309

Cobb-Clark, D. A., Kassenboehmer, S. C. & Sinning, M. G. (2016). Locus of control and savings. *Journal of Banking y Finance, 73*, 113-130. https://doi.org/10.1016/j.jbankfin.2016.06.013

Davis, P. A. (2011). Angry athletes: Psychological, physiological, and performance implications. In J.P. Welty (Eds.), *Psychology of anger:*

Symptoms, causes and coping. New York, NY: Nova Science Publishers Inc.

Davis, P. A., Woodman, T. & Callow, N. (2010). Better out than in: the influence of anger regulation on physical performance. *Personality and Individual Differences, 49*(5), 457-460. https://doi.org/10.1016/j.paid.2010.04.017

De la Vega, R., Rivera, O. & Ruiz, R. (2011). Hardiness in endurance races: A comparison between skyrunning and 10 kilometers. *Revista de Psicología del Deporte, 20*(2), 445-454.

Detert, J., Treviño, L. & Sweitzer, V. (2008). Moral disengagement in ethical decision making: A study of antecedents and outcomes. *Journal Of Applied Psychology, 93*(2), 374-391. doi: 10.1037/0021-9010.93.2.374

Del Vecchio, T. & O'Leary, K. D. (2004). Effectiveness of anger treatments for specific anger problems: a meta-analytic review. *Clinical Psychology Review, 24*(1), 15–34. https://doi.org/10.1016/j.cpr.2003.09.006

Eschleman, K. J., Bowling, N. A. & Alarcon, G. M. (2010). A meta-analytic examination of hardiness. *International Journal of Stress Management, 17*(4), 277–307. https://doi.org/10.1037/a0020476

Fyhn, T., Konglevoll, K. & Johnsen, B.H. (2016). Resilience factors among police investigators: Hardiness-commitment a unique contributor. *Journal of Police and Criminal Psychology, 31*(4), 261-269. https://doi.org/10.1007/s11896-015-9181-6

Ferrando, P., Demestre, J., Anguiano-Carrasco, C. & Chico, E. (2011). Evaluación TRI de la escala I-E de Rotter: un nuevo enfoque y algunas consideraciones. *Psicothema, 28*(2), 282-288.

Fonseca-Pedrero, E., Lemos-Giráldez, S., Paino, M., Villazón-García, U. & Muñiz, J. (2009). Validation of the schizotypal personality questionnarie brief form in adolescents. *Schizophrenia Research, 111*(1-3), 53-60.

Fontaine, J. R. J., Scherer, K. R., Roesch, E. B. & Ellsworth, P. C. (2007). The world of emotion is not two-dimensional. *Psychological Science, 18*, 1050-1057. https://doi.org/10.1111/j.1467-9280.2007.02024.x

Gatz, M. & Karel, M. J. (1993). Individual change in perceived control over 20 years. *International Journal of Behavioral Development, 16*(2), 305–322. https://doi.org/10.1177/016502549301600211

Golby, J. & Sheard, M. (2004). Mental toughness and hardiness at different levels of rugby league. *Personality and Individual Differences, 37*(5), 933–942. https://doi.org/10.1016/j.paid.2003.10.015

Gómez, G. & Sánchez, M. (2019). Description and differences in the psychological variables related to sports performance of triathletes and para-triathletes. *Retos: Nuevas Tendencias en Educación Física, Deporte y Recreación,* (36), 22-25.

González-García, H. & Pelegrín, A. (2020). Influence of perceived parental education styles on hardy personality in sport. *Journal of Sports Science & Medicine, 19*(1), 158–165.

González-García, H., Pelegrín, A. & Carballo, J. L. (2017). Ira y personalidad resistente en deportistas de raqueta y resistencia. *Revista Iberoamericana de Ciencias de la Actividad Física y el Deporte, 6*(2), 21-29.

González-García, H., Pelegrín, A. & Carballo, J. L. (2018). Estilos educativos parentales como predictor del éxito y nivel de competición deportivo. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte 18*(71), 589-604. https://doi.org/10.15366/rimcafd2018.71.012

González-García, H., Pelegrín, A. & Trinidad, A. (2019). Differences in anger depending on sport performance in table tennis players. *Journal of Human Sport and Exercise, 15*(1), 177-185. https://doi.org/10.14198/jhse.2020.151.16

Guszkowska, M. & Kuk, A. (2012). Health locus of control of polish undergraduates: gender, faculty and type of physical activity differences. *Baltic Journal of Health and Physical Activity, 4*, 189-196.

Hanin, Y. (2007). Emotions in sports: Current issues and perspectives. En G. Tenembaum & R. Eklund (Eds.), *Handbook of sport psychology* (pp. 31–58). New Jersey, NJ: John Wiley & Sons.

Hanton, S., Jones, G. & Mullen, R. (2000). Intensity and direction of competitive state anxiety as interpreted by rugby players and rifle shooters. *Perceptual and Motor Skills, 90*, 513–521.

Hyde, L., Shaw, D. & Moilanen, K. (2009). Developmental precursors of moral disengagement and the role of moral disengagement in the development of antisocial behavior. *Journal of Abnormal Child Psychology, 38*(2), 197-209. https://doi.org/10.1007/s10802-009-9358-5

Huang, H. C., Liu, L. W., Chang, C. M., Hsieh, H. H. & Lu, H. C. (2019). The effects of locus of control, agents of socialization and sport socialization situations on the sports participation of women in Taiwan. *International Journal of Environmental Research and Public Health*, *16*(10), 1841. https://doi.org/10.3390/ijerph16101841

Jaenes, J. C., Godoy-Izquierdo, D. & Román, F. J. (2008). Elaboración y validación psicométrica de la escala de personalidad resistente en maratonianos (EPRM). *Cuadernos de Psicología del Deporte, 8*(2), 59-81.

Jafari, E., Sohrabi, F., Jomehri, F. & Najafi, M. (2009). The Relationship between type C personality, locus of control and hardiness in patients suffering from cancer and normal subjects. *Journal of Clinical Psychology, 1*(1), 57-66.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M. & Catlin, J. (2005). Development and validation of the sport emotion questionnaire. *Journal of Sport and Exercise Psychology, 27*, 407–431. https://doi.org/10.1123/jsep.27.4.407

Kaufman, H. (1970). *Aggression and altruism*. New York: Holt, Reinhart y Winston.

Kobasa, S. C., Maddi, S. R. & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology, 42*(1), 168–177. https://doi.org/10.1037/0022-3514.42.1.168

Lane, A. M., Davis, P. A. & Stanley, D. M. (2014). Do emotion regulation intentions and strategies differ between situations? *Current Advances in Psychology Research, 1*, 26-32.

Latinjak, A. T. (2012). The underlying structure of emotions: A tri-dimensional model of core affect and emotion concepts for sports. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte, 7*, 71-87.

Latinjak, A. T., Cook, K. & López-Ros, V. (2013). What does the Sport Emotion Questionnaire measure in terms of core affect? *Journal of Health Science, 1*, 21-27.

Latinjak, A. T., López-Ros, V. & Font-Lladó, R. (2015). A descriptive study of emotion concepts using dimensional models of core affect. *Estudios de Psicología, 36*, 413-450.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The Sport Psychologist, 14*, 229-252.

Lee, D., So, W. & Lee, S. (2021). The Relationship between Korean Adolescents' Sports Participation, Internal Health Locus of Control, and Wellness during COVID-19. *International Journal of Environmental Research and Public Health, 18*(6), 2950. doi:10.3390/ijerph18062950

Lerner, J. S. & Tiedens, L. Z. (2006). Portrait of the angry decision maker: How appraisal tendencies shape anger's influence on cognition. *Journal of Behavioral Decision Making, 19*, 115-137. https://doi.org/10.1002/bdm.515

Maddi, S. R. & Hess, M. J. (1992). Personality hardiness and success in basketball. *International Journal of Sport Psychology, 23*(4), 360–368.

Mahamud, J., Tuero, C. & Márquez, S. (2007). Características psicológicas relacionadas con el rendimiento: comparación ente los requerimientos de los entrenadores y la percepción de los deportistas. *Revista de Psicología del deporte, 14*(2), 237-251.

Martinent, G. & Ferrand, C. (2009). A naturalistic qualitative study of the directional interpretation process of discrete emotions during high-stakes table tennis matches. *Journal of Sport and Exercise Psychology, 31*, 318–336.

Matthews, G., Lin, J. & Wohleber, R. (2017). Personality, Stress and Resilience: A Multifactorial Cognitive Science Perspective. *Psihologijske Teme, 26*(1), 139-162. https://doi.org/10.31820/pt.26.1.6.

Menéndez-Santurio, J. I. & Fernández-Río, J. (2015). Niveles de ira en practicantes de boxeo y kickboxing: diferencias en función de la disciplina y el nivel deportivo. *Cuadernos de Psicología del deporte, 15*(3), 75–86.

Mohammad, A. & Paul, S. (2019). Comparative study on emotional intelligence and locus of control among high and low female achievers of Volleyball players. *International Journal of Physiology, Nutrition and Physical Education, 4*(1), 1636-1638.

Oliva-Mendoza, F., Calleja, N. & Hernández-Pozo, R. (2012). Escala de creencias sobre la ira en el deporte de combate con atletas mexicanos. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte, 12*(45), 110–121.

Ortega, M. E., Ortiz, G. R. & Martínez, A. J. (2014). Burnout en estudiantes de pregrado de medicina y su relación con variables de personalidad. *Terapia Psicológica, 32*(3), 235-242.

Page, G. L. & Scalora, M. J. (2004). The utility of locus of control for assessing juvenile amenability to treatment. *Aggression and Violent Behavior, 9*(5), 523–534. https://doi.org/10.1016/S1359-1789(03)00047-8

Parrott, W. (2001). *Emotions in Social Psychology.* Philadelphia: Psychology Press.

Ramzi, S. & Besharat, M. A. (2010). The impact of hardiness on sport achievement and mental health. *Procedia Social and Behavioral Sciences, 5*, 823-826.

Rezae, A., Ghaffari, M. & Zolfalifam, J. (2009). A survey and comparison of team cohesion, role ambiguity, athletic performance and hardiness in elite and non elite football players. *Research Journal of Biological Sciences, 4*(9), 1010-5.

Ring, C., Kavussanu, M., Al-Yaaribi, A., Tenenbaum, G. & Stanger, N. (2019). Effects of antisocial behaviour on opponent's anger, attention, and performance. *Journal of Sports Sciences*, *37*(8), 871-877. https://doi.org/10.1080/02640414.2018.1532061

Robazza, C. & Bortoli, L. (2007). Perceived impact of anger and anxiety on sporting performance in rugby players. *Psychology of Sport and Exercise, 8*(6), 875-896. https://doi.org/10.1016/j.psychsport.2006.07.005

Robles, A., Abad, M. T., Robles, J. & Giménez, F. J. (2019). Factors that influence the process of formation of the olympic judokas. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte, 19*(74), 259-276. https://doi.org/10.15366/rimcafd2019.74.006

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied, 80*(1), 1–28. https://doi.org/10.1037/h0092976

Ruiz, M. & Hanin, Y. (2011). Perceived impact of anger on performance of skilled karate athletes. *Psychology of Sport and Exercise, 12*(3), 242-249. https://doi.org/10.1016/j.psychsport.2011.01.005

Ruiz, G. & Salinero, J. J. (2012). Psycho-social factors determining success in high-performance triathlon: compared perception in the coach-athlete pair. *Perceptual Motor Skills, 115*(3), 865-880. https://doi.org/10.2466/08.25.pms.115.6.865-880

Ruiz, M.C. & Yuri, H.L. (2011). Perceived impact of anger on performance of skilled karate athletes. *Psychology of Sport and Exercise, 12*(3), 242-249. https://doi.org/10.1016/j.psychsport.2011.01.005

Sheard, M. & Golby, J. (2010). Personality hardiness differentiates elite-level sport performance. *International Journal of Sport and Exercise Psychology, 8*(2), 160-169.

Sijtsma, K. (2009). On the use, the misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika, 74*(1), 107–120. https://doi.org/10.1007/s11336-008-9101-0

Tamir, M., Mitchell, C. & Gross, J. J. (2008). Hedonic and instrumental motives in anger regulation. *Psychological Science, 19*(4), 324–328. https://doi.org/10.1111/j.1467-9280.2008.02088.x

Tsai, J.J., Wang, C.H. & Lo, H.J. (2014). Locus of control, moral disengagement in sport, and rule transgression of athletes. *Social Behavior and Personality: An International Journal, 42*(1), 59-68. https://doi.org/10.2224/sbp.2014.42.1.59

Wallace, M. T., Barry, C. T., Zeigler-Hill, V. & Green, B. A. (2012). Locus of control as a contributing factor in the relation between self-perception and adolescent aggression. *Aggressive Behavior, 38*, 213-221. https://doi.org/10.1002/ab.21419

Wittmann, M., Arce, E. & Santisteban, C. (2008). How impulsiveness, trait anger, and extracurricular activities might affect aggression in school children. *Personality and Individual Differences, 45*(7), 618–623. https://doi.org/10.1016/j.paid.2008.07.001

Yang, Y. & Green, S. B. (2011). Coefficient alpha: a reliability coefficient for the 21st century? *Journal of Psychoeducational Assessment, 29*(4), 377–392. https://doi.org/10.1177/0734282911406668

Yim, O. & Ramdeen, K. T. (2015). Hierarchical cluster analysis: Comparison of three linkage measures and application to psychological data. *The Quantitative Methods for Psychology, 11*(1), 8-21. https://doi.org/10.20982/tqmp.11.1.p008

Número de citas totales / Total references: 68(95.59%)
Número de citas propias de la revista / Journal's own references: 3(4.41%)