

## EATING DISORDERS AND PSYCHOLOGICAL WELL-BEING IN NON-ELITE TEAM ATHLETES

## TRASTORNOS DE LA CONDUCTA ALIMENTARIA Y BIENESTAR PSICOLÓGICO EN DEPORTISTAS DE EQUIPO NO ELITE

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## Abstract

The aim of this preliminary work was to determine the prevalence of Eating Disorders (ED) in non-elite national team sports athletes and to describe their perceived psychological well-being based on the PERMA model. Additionally, it analyzes psychological well-being based on the risk of presenting symptoms related to ED. Seventy-one athletes participated in the study. The 'PERMA-Profiler' questionnaires and the abbreviated version of the Athlete's Eating Habits Questionnaire, CHAD-B, were used. The results show that 25.3% of the athletes are at high risk of suffering from an eating disorder. There are no statistically significant differences based on sex in the risk of ED. Athletes report a psychological well-being score of 7.6 on a scale of 0-10. The most prominent dimensions are social relationships and meaning; on the other hand, the Accomplishment scale received the lowest scores. We did not observe significant differences in psychological well-being based on the risk of ED, nor based on sex. This study provides relevant information for coaches and sports psychologists, who should pay special attention to the detection of ED cases that are invisible, denied, or unrecognized. Additionally, it is recommended to enhance optimism, emotional intelligence, and intrinsic motivation for improved well-being.

**Keywords:** Psychological well-being, PERMA, eating disorders, sport, mental health.

## Resumen

El objetivo de este trabajo preliminar fue conocer la prevalencia de Trastornos de la Conducta Alimentaria (TCA) en deportistas de deportes de equipo nacionales no-élite y describir su bienestar psicológico percibido a partir del modelo PERMA. Además, analizar el bienestar psicológico en función del riesgo de presentar sintomatología relacionada con TCA. En el estudio participaron 71 deportistas. Se utilizaron los cuestionarios «PERMA-Profiler», y el Cuestionario de Hábitos Alimentarios del Deportista, versión abreviada CHAD-B. Los resultados muestran que un 25.3% de los deportistas presentan alto riesgo de sufrir un TCA. No hay diferencias estadísticamente significativas en función del sexo en el riesgo de TCA. Los deportistas presentan un bienestar psicológico de 7.6 en un rango de 0-10. Las dimensiones más destacadas son Relaciones sociales y Significado; por el contrario, la escala Sentimientos de Logro fue la que obtuvo menores puntuaciones. No observamos diferencias significativas en el bienestar psicológico en función del riesgo de TCA, ni en función del sexo. Este estudio nos ofrece información relevante para entrenadores y psicólogos deportivos, que tendrían que poner especial atención en la detección de casos de TCA, invisibilizados, negados o no reconocidos. Además, se recomienda aumentar su optimismo; inteligencia emocional; y motivación intrínseca; para una mejora del bienestar.

**Palabras clave:** Bienestar psicológico, PERMA, Trastornos de alimentación, deporte, salud mental.



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## Introduction

While sports participation provides unquestionable benefits for individuals' health and well-being, it is known that athletes are exposed to additional risks that can affect their mental health, such as an increased risk of Eating Disorders (ED) (Chang et al., 2019).

ED present a hurried social expansion, increasing their prevalence from 3.5% for the period 2000-2006 to 7.8% for the period 2013-2018; These disorders are characterized by serious alterations in eating behavior and body weight, which lead to multiple psychiatric and somatic complications that can, sometimes, cause an increase on mortality; ED are common in adolescents and even more so in young adults, with a higher prevalence in women than in men (Galmiche et al., 2019).

During the COVID-19 pandemic, the incidence of ED has continued to growing up (Silén & Keski-Rahkonen, 2022); Furthermore, it has been described that the prevalence of ED could be underestimated due to the lack of inclusion of all types of ED in epidemiological surveys (Qian et al., 2022).

It is known that ED means a threat to the physical, psychological and social well-being of the person. Furthermore, in the case of athletes, the imbalance caused by an ED can be aggravated due to exercising without the necessary availability of energy and nutrients (Baldó-Vela et al., 2021). In fact, previous studies have shown a high prevalence of low energy availability in female athletes and dancers (Torres-McGehee et al., 2021) either for unintentional reasons (such as an involuntary dietary deficit or excessive energy expenditure) or intentional (for example, by purgative methods associated with ED).

A recent meta-analysis has concluded that athletic and non-athletic women report similar levels of ED (Chapa et al., 2022) with concerns mostly focused on weight loss (Treasure et al., 2020). However, in high-performance athletes, ED are more prevalent than in the normal population (Sundgot-Borgen & Torstveit, 2004), reaching up to 36% of prevalence (Perry et al., 2022).

In men, ED present concerns mainly focused on their body image and muscles (Treasure et al., 2020). These are disorders that can be invisible and underestimated due to their own prejudices, since historically ED are a kind of mental disorders associated with the female and with an external appearance, sometimes deceptively healthy (Limbers et al., 2018). Elite male athletes are more vulnerable to ED compared to men in the general population (Souter et al., 2018), as happened with elite female athletes (Sundgot-Borgen & Torstveit, 2004).

ED in sports have been classically associated with women who practice aesthetic sports, sports with a weight category, gym, endurance sports (Baldó-Vela et al., 2021) and elite sports (Perry et al., 2022; Rice et al., 2016; Souter et al., 2018). This has led to a lack of studies of male populations and non-elite team athletes (semi-professional or amateur), although there are previous studies that have begun to question the traditional classification of sports as high or low risk of ED (Godoy-Izquierdo et al., 2019). Therefore, it is possible to hypothesize that non-elite male athletes may be a population that is particularly vulnerable to ED, due to greater pressure from intermediate categories to reach the highest level of performance without having all the resources needed to do so (Baldó-Vela & Bonfanti, 2019; Baldó-Vela et al., 2021).

Although ED may be more prevalent in some athletes, other studies affirm that sport can be a protective factor, due, for example, to an increase in self-confidence and well-being. Psychological well-being has been the object of study in athletes, but there are no previous studies that start from the analysis of the perception of well-being in athletes with the Seligman's (2011) model, constituting the theoretical framework called PERMA, which evaluates elements of well-being such as positive emotions, engagement, relationships, meaning and accomplishment. There is also no previous evaluation of differences based on sex, which could be substantial (Romero et al., 2009).

Therefore, taking into account the background above mentioned, the aim of this work was to know the updated prevalence of ED in non-elite young adult athletes of national team sports and to describe its relationship with perceived psychological well-being and its fundamental elements through of the PERMA model.

## Materials and Methods

### Participants

Seventy-one Spanish, federated, non-elite athletes (semi-professional and amateur) took part in the present study, from five non-aesthetic team sports disciplines: football, volleyball, hockey, basketball and futsal. Thirty-eight of the athletes were women (54.16%) and 33 were men (45.83%), aged between 18 and 40 years ( $M = 24.5$ ;  $SD = 4.7$ ). Convenience sampling has been carried out.

The athletes evaluated were young adults covering ages within the vulnerability range for eating disorders (ED) (Galmiche et al., 2019). Furthermore, they were semi-professional and amateur, to collect information from non-elite athletes (the vast majority of athletes), that is, federated athletes participating in regulated competitions whose dedication and remuneration is less than professional; and athletes who practice sports for leisure, health or exercise reasons, but without receiving any salary in return.

Most of the sample (62.5%) had a university degree or were university students, 19.4% had a high school degree, and 18.1% had technical education. All study participants had been practicing sports for five or more years. 31.1% of the sample practiced sports less than 4 days per week, while 68.1% training or playing at least four times or more per week. Twelve of the athletes surveyed were mildly or moderately injured at the time of data collection (16.7%). All athletes were interviewed during training and/or competition periods.

### *Instruments*

A questionnaire was developed ad hoc for this study was applied to the athletes, which included 3 sections. Through this self-developed questionnaire, sociodemographic and sports variables were collected (date of birth, sex, type of sport, etc.).

The second section of the questionnaire included the “PERMA-Profiler” test (Butler & Kern, 2016) to evaluate perceived psychological well-being. The PERMA-Profiler is a scale that measures the five pillars or dimensions of well-being proposed in the PERMA theory: positive emotions, engagement, relationships, meaning and accomplishment, together with contrast variables (negative emotions, loneliness and the perception of health).

Positive Emotions refers to how pleasant and satisfying emotions are experienced, such as optimism, gratitude and humor. These emotions are important for well-being and have the potential to increase people’s personal, intellectual, and social resources.

Engagement means being completely involved and engaged to life. This includes having optimal experiences using personal strengths to successfully complete tasks in everyday life.

Interpersonal Relationships is the pillar of well-being that deals with the ability to establish and experience healthy relationships in various life areas. This includes empathy, the development of healthy social relationships, affective bonds, and social intelligence.

The Meaning dimension is found in the identification and application of personal strengths to carry out activities that transcend the individual. This may involve altruistic actions to benefit others, contribute to social well-being, and establish healthy relationships at different stages of development.

Accomplishment refers to achieving personal goals and objectives that have significant intrinsic value. It involves developing individual potential by striving for meaningful results in different life areas and persevering despite challenges.

The PERMA-Profiler scale was translated into Spanish following the International Testing Commission’s Guidelines for the translation and adaptation of tests (International Testing Commission, 2017). This translation, like the original scale, is composed of 23 Likert-type response items in the range of 0 to 10. It presents a Cronbach’s  $\alpha$  of between .65 and .94 for each of the factors.

Finally, the third section of the questionnaire includes an instrument to detect the risk of ED specific to athletes. Specifically, the Athlete’s Eating Habits Questionnaire in its abbreviated version CHAD-B was applied (Díaz & Dosil, 2012) (available upon request). This test was designed and validated specifically to evaluate the risk of eating pathology in Spanish athletes, and the abbreviated version consists of 20 Likert-type response items, ranging from 1 to 6 (1 “completely disagree” (not it never happens to me) and 6 “completely disagree” (it always happens to me). According to the authors, the 20 items constitute four dimensions. Dimension 1 is the fear of gaining weight during periods of rest and physical exercise. Dimension 2 is defined as psychological discomfort associated with weight and body shape against comments and attitudes of others. Dimension 3 is obsessive concern about food and weight in relation to peers, while Dimension 4 expresses cognitions related to body satisfaction and self-image. Currently, it constitutes the only screening questionnaire in Spanish, valid, reliable and specific for the detection of ED in sport players. It has been validated with a Cronbach’s  $\alpha$  of .93. A score of  $\geq 60$  points indicates high risk and  $\geq 66$  is the cut-off point to determine very high risk (Díaz & Dosil, 2012). The Cronbach’s  $\alpha$  observed in this study was .96 for the total scale.

### *Procedure*

To carry out this research, different sports clubs in Cantabria were contacted through their coaches or physiotherapists, to explain the aim of the work and request the possibility of collecting the data. At the time when consent was obtained, as a team, an appointment was made to go to the sports facilities where the training sessions of the different clubs took place. A thoroughly explanation of the objectives of the research was conducted. The attendance of this session was necessary for the study participants to complete the test. In this session, participants gave their consent to participate, assuming the confidentiality and anonymity of the data. Furthermore, if they wish, they could dropout the survey at any time, and the responses will be withdrawn from the study. The procedure was approved by the Ethics Committee of the Catholic University of Murcia CEO072301.

### Statistical Analysis

A cross-sectional observational study has been carried out. Descriptive analyzes and frequency studies have been carried out, as appropriate. The Kolmogorov-Smirnoff test was used to determine the normality of the variables. To compare the scores obtained in well-being and risk of ED, the *t* test for independent samples was used, and the Levene test was carried out to check the homogeneity of variances. All these procedures were done to compare whether there were possible differences between groups depending on different variables. All statistical procedures were carried out with the SPSS-27.0 statistical program. A statistical significance level of  $p < .05$  was established.

### Results

Of the athletes, 25.3% were at risk of developing an eating disorder (ED) (18.3% women and 7.0% men). Athletes at high risk for ED showed notable self-reported psychological well-being ( $M = 7.7$ ). The least highlighted area was Positive Emotions ( $M = 7.17$ ), and the most strengthened area was Relationships ( $M = 8.6$ ). There are no statistically significant differences in CHAD scores between men and women ( $p = .20$ ) although women had higher mean scores for ED risk.

The psychological well-being perceived by athletes was similar between those with high risk of ED and those without ( $p = .52$ ). However, the Engagement dimension had higher scores in athletes with high risk of ED ( $p = .01$ ) (Table 1).

**Table 1**  
Total well-being scores (PERMA) and its dimensions in not elite teams athletes depending on whether or not they were at risk of eating disorders

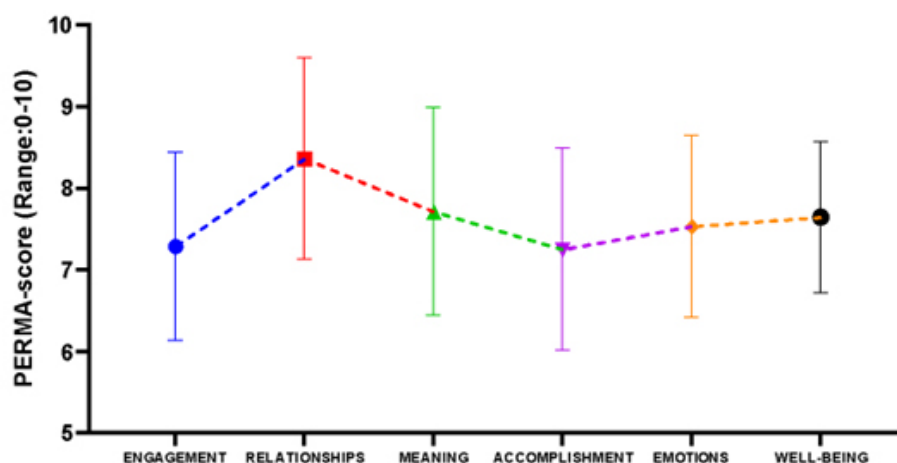
	NO RISK (n = 53)	RISK (n = 18)	t	p	Effect size (d)
ENGAGEMENT	7.09 ± 1.12	7.87 ± 1.09	- 2.5562	.013	- 0.6974
RELATIONSHIPS	8.26 ± 1.2	8.67 ± 1.04	- 1.2001	.234	- 0.3274
MEANING	7.71 ± 1.26	7.74 ± 1.33	- 0.0861	.932	- 0.0235
ACCOMPLISHMENT	7.18 ± 1.28	7.46 ± 1.13	- 0.8283	.410	- 0.2260
EMOTIONS	7.66 ± 1.04	7.17 ± 1.30	1.6365	.106	0.4464
WELL-BEING	7.60 ± 0.94	7.77 ± 0.89	- 0.6417	.523	- 0.1750

Note: Data represent mean ± SD. To compare athletes with or without risk of eating disorders, the Student t test was used. The effect size has been determined according to Cohen's parameter.

The perceived psychological well-being for all athletes had a mean score of 7.6 and a  $SD = 0.92$  in a range of 0-10, with minimum scores of 4.75 and maximum scores of 9.19. The average score for the 25th percentile was 7.12, for the p50 7.84, and for the p75 the score was 8.25.

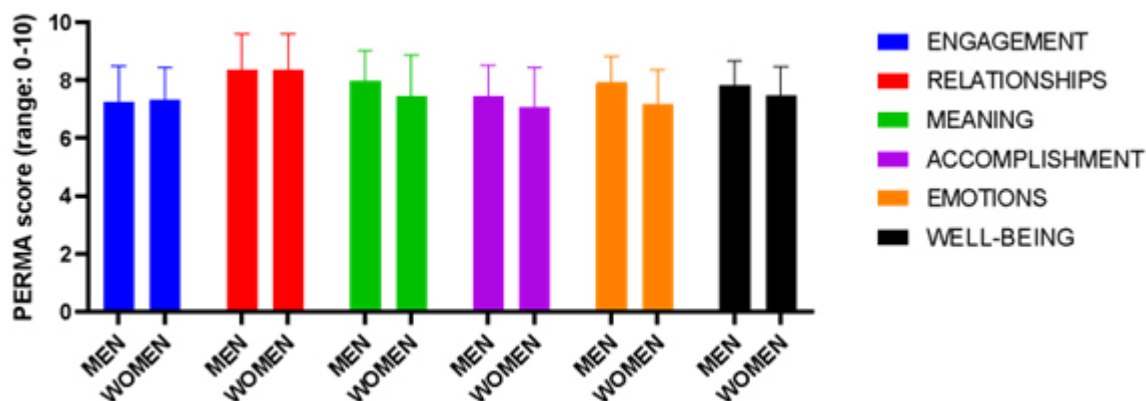
The dimensions of perceived psychological well-being exhibited different levels, as shown in Figure 1. The dimension of relationships was the one that showed the highest score, compared to the dimensions of engagement and accomplishment, which showed the lowest values. Nevertheless, both total well-being and all dimensions were always within a range of high scores (above seven out of ten points) (Figure 1).

**Figure 1**  
Total well-being scores (PERMA) and its dimensions in athletes non-elite team de equipo no-elite



Reviewing differences in well-being based on sex, the data showed a higher score in men in the Positive Emotions dimension ( $p < .001$ ). On the other hand, although no significant differences were observed in the perceived psychological well-being ( $p = .100$ ) between men and women, the mean scores were higher in men (Figure 2).

**Figure 2**  
Total well-being scores (PERMA) and its dimensions in team athletes non-elite based on sex



## Discussion

The present work arose with the objective of knowing the prevalence of Eating Disorders (ED) in non-elite young adult athletes of national team sports and describing its relationship with psychological well-being perceived from the PERMA model. According to this, it can be stated that 26.4% of the participants in the study presented symptoms compatible with the presence of an ED, 7% are men, which indicates a lower prevalence of ED risk than that detected in other studies such as the de Baldó-Vela et al. (2022) who detected a 20.36% prevalence of a clinical profile compatible with an eating disorder in male athletes from amateur, professional and semi-professional teams; and also less than the 14% found in Spanish semi-professional team athletes (Baldó-Vela & Bonfati, 2019). These differences could be related to the professional category considered, the different sports used or other contexts.

It is important to understand that these data must be known to be able to prevent, detect and avoid comorbidities, such as substance abuse, already described in other studies (Limbers et al., 2018), with a higher prevalence in men (Souter et al., 2018), and that in the medium-long term they could likely disrupt the well-being and performance of athletes.

It should be noted that, in our athletes, no differences in ED based on sex were observed, although women had higher scores. In the same line, recent studies show how female athletes have a higher risk of developing an ED than men (Díaz & Díaz, 2012; Godoy & Díaz, 2021), probably due to pressure, both the sporting and social contexts, to maintain a certain weight or body image (Allan & Owen, 2019).

The fact that there are no differences by sex in the symptomatology of risk detection of an ED is noteworthy, since the care offered for the prevention, detection and treatment of ED symptomatology by coaches and sports psychologists is frequent in the female sex, leaving aside the male.

An initially contradictory result derived from the present work was that the athletes interviewed showed high levels of reported well-being, regardless of the presence or not of ED. This issue is quite striking due to the knowledge of the comorbid problems associated with them, which seem to be invisible, denied or not recognized.

The most prominent dimension of well-being in athletes coincides with the most prominent in the literature within the psychological well-being of the PERMA model, which specifically is Relationships, or the ability to establish and experience healthy relationships in various areas of life, including empathy, the development of healthy social relationships, emotional bonds and social intelligence. These social relationships could be protecting the overall well-being of athletes.

The least prominent dimension in the perceived well-being of the athletes evaluated in the present work was Accomplishment, which refers to achieving personal goals and objectives that have significant intrinsic value. Accomplishment involves developing individual potential by dealing with meaningful results in different areas of life and persevering despite challenges. This information highlights the importance of continuing to work on the intrinsic motivation of athletes.

In the case of athletes detected as being at high risk of presenting an ED, experiencing positive, pleasant and desirable emotions is observed as the most damaged area in their well-being.

The reported well-being was higher in men, as reported in previous research (Reche et al., 2022), although not significantly in the present study. Male athletes scored higher than female athletes on how they experienced pleasant and satisfying emotions, such as optimism, gratitude, and humor. These emotions are important for well-being and have the potential to increase personal, intellectual, and social resources.

The limitations of the present study are associated with its cross-sectional nature, in addition to the small sample size due to its preliminary nature. On the other hand, this study was carried out with a self-report methodology, which is related to the limitations of this research methodology.

Regarding practical application, this study shows the importance of encouraging positive emotions in non-elite Spanish team sport women and improving accomplishment, both in men and women.

Thus, it is recommended to pay special attention to emotional intelligence, a variable that has been seen to affect the psychological well-being of athletes (Núñez et al., 2011). Furthermore, it is suggested to intervene in dispositional optimism since it has been described that a high optimism is associated with higher Accomplishment dimension of the PERMA model (Fernández Abascal & Díaz, 2022). Likewise, it is recommended to mediate to improve intrinsic motivation, and to develop strategies focused on the task and the sports experience, which appear in previous studies as predictors of sports psychological well-being (Cantón-Chirivella et al., 2015).

Another practical application is the need to raise awareness of the high existence of ED (without differences based on sex) among football, volleyball, hockey, basketball and futsal coaches, despite the perceived well-being of the athletes. The prevalence estimates for EDs can vary by sport and context, but what, certainly, these disorders are likely underrecognized, underreported, and frequently, underdiagnosed, especially in men (Eichstadt et al., 2020). Finally, it would be necessary to carry out psychoeducational programs to give athletes skills to become aware of their disorder.

As future lines of research, it would be interesting to implement positive third-generation interventions and psychoeducation in athlete care programs, taking into account the sex differences found, and to evaluate progression of these athletes at long-term.

## Conclusions

According to the results of this study and its discussion and analysis, the following main conclusions can be drawn:

The psychological well-being perceived by non-elite athletes is medium-high. The dimension that stands out the least is accomplishment and the most strengthened are relationships. Men present greater positive emotions than women.

Twenty-five percent of team athletes are at high risk of having an ED, mostly women in our national context. Their symptoms related to an ED do not interfere with their perceived psychological well-being.

Men and women do not differ in perceived psychological well-being or ED, although men's scores were higher in the case of well-being and lower in symptomatology related to an ED.

Male non-elite team sports players present the same risk as women for developing ED.

The same attention should be carried out for men and women, mainly by coaches and sports psychologists, in the prevention, detection and treatment of ED symptoms, to generate programs that can make athletes aware of their disorder, whether denied, invisible or not recognized.

This study also shows the need to screen for ED among non-elite team athletes and not underestimate the real prevalence, which reaches 25% of them. In this way, we promote early detection of ED symptoms for intervention.

## Ethics Committee Statement

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the Universidad Católica de Murcia (registration code CEO072301., date of approval: 21 July 2023).

## Conflict of Interest Statement

None.

## Authors' Contribution

Conceptualization I.D.C. & C.R.G.; Methodology I.D.C.; Software J.J.H.M.; Validation J.J.H.M., & C.R.G.; Formal Analysis C.R.G.; Investigation I.D.C.; Resources J.J.H.M.; Data Curation C.R.G.; Writing – Original Draft I.D.C. & C.R.G.; Writing – Review



& Editing J.J.H.M. & C.R.G.; Visualization J.J.H.M.; Supervision J.J.H.M.; Project Administration C.R.G.; Funding Acquisition None. All authors have read and agreed to the published version of the manuscript.

## Data Availability Statement

The data that support the findings of this study are available under reasonable request to the corresponding author ([jjhernandez@ucam.edu](mailto:jjhernandez@ucam.edu)).

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