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Why Do We Run in a Sporting Event? A Gender Perspective through the Half-Marathon of Cordoba, Spain

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Abstract: The study of participants' motivations in sporting events is a recurring topic that provides valuable information for stakeholders interested in the event's success. This motivation structure varies between geographies and evolves, so addressing new case studies from fresh perspectives updates and enriches the knowledge on the subject. Through a survey of 416 participants in the Córdoba Half-Marathon, Spain, we aim to explore the existence of new dimensions of motivation to participate in running events, as well as to analyse if there are statistically significant differences between men and women in their participation motivations and the magnitude of these differences. To this end, an Exploratory Factor Analysis (EFA) has been conducted, and the Mann–Whitney U and Hedges' G statistics have been utilised. The results of this research complement previous studies with two new dimensions of motivation: inclusivity at various levels and the posting of images on social networks. Additionally, the leading role of female participants is evident, as they are more motivated than men to compete and surpass themselves.

Keywords: sporting event; half-marathon; motivation; participants; runners; gender; Exploratory Factor Analysis (EFA); Cordoba (Spain)



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1. Introduction

The motivation behind participation in running sports events has garnered significant attention within the scientific community. The latter has led to the development of various measurement instruments, with one of the most widely utilised being the MOMS scale (Masters et al. 1993). This scale, validated across different languages and geographical contexts such as Spain (Ruiz-Juan and Zarauz-Sancho 2011), Chile (Duclos-Bastías et al. 2021), Poland (Dybala 2013), and Indonesia (Hongwei and Resza 2021), encompasses four general categories of motivation, structured into nine specific dimensions: general health, weight concern, affiliation, recognition, competition, personal goal achievement, psychological goals, self-esteem, and sense of life.

Exploring new dimensions for participation in marathon events often stems from significant societal changes (Zach et al. 2017). As participants' demographics continuously evolve alongside societal shifts (Loughran et al. 2013), their needs and motivations are likewise influenced. The COVID-19 pandemic, for instance, prompted a re-evaluation of motivations for participation, with the addition of a safety precaution dimension alongside traditional motivations such as competition, skill improvement, socialisation, and enjoyment (Tomino and Perić 2022).

Therefore, this study aims to investigate potential new dimensions of motivation for participating in half-marathon events, specifically focusing on social media interaction and the event's inclusive nature. The research aims to address three main research questions:

Research Question 1. *Are social media interaction and promotion of inclusion viable dimensions of motivation for participating in half-marathon events?*

Research Question 2. *Do statistically significant differences exist from a gender perspective regarding motivations for participating in half-marathon events?*

Research Question 3. *If applicable, what is the size of these differences in motivation between genders?*

The answers to these research questions will contribute to enhancing the existing scientific literature in this field and also shed light on the evolving motivations behind participation in running sports events.

2. Literature Review

2.1. Motivation to Participate in Running Sporting Events

Zach et al. (2017) identified eleven motivational factors among participants in running events: managing daily life, life meaning, self-esteem, recognition, affiliation, health concerns related to weight, disease prevention, longevity, fitness maintenance, personal competition, and individual goal achievement. However, other researchers have utilised diverse instruments to investigate the motivations behind participation in marathons. Ridinger et al. (2012) identified pleasure seeking, the central role of running in participants' lives, and negotiation effectiveness as three dimensions positively and significantly impacting participants' commitment to marathons. Parra-Camacho et al. (2019) found five motivation dimensions: physical–psychological, social interest in running events, time occupation and social recognition, competitive motives, and material motives related to prizes or race bags. Their study further categorised participants into three clusters based on motivation: hedonistic individualists, socialised hedonists, and sports enthusiasts. Bell and Stephenson (2014), employing the Theory of Planned Behaviour (TPB), identified altruism as an additional dimension of motivation, in addition to social affiliation, competition, and health orientation.

The significance of each motivational dimension has also been a focal point of research. Ruiz-Juan and Zarauz-Sancho (2014) found higher intrinsic motivation values, such as self-esteem, health care, and life meaning, among marathon runners, contrasting with lower values in extrinsic motivation dimensions, such as external recognition. Pereira et al. (2021) in Portugal echoed these findings, highlighting health orientation, self-esteem, and life meaning as primary motivations for participation, with time constraints identified as the main participation barrier. Moreover, researchers have often compared motivations across different race categories, including five-kilometre races, half-marathons, marathons, and ultra-marathons. Doppelmayr and Molkenthin (2004) reported greater competition motivation among marathon runners compared to ultra-marathon runners, while the latter exhibited higher motivation for contact with nature and life meaning. Fifteen years later, Waśkiewicz et al. (2019) confirmed high scores for life meaning among ultra-marathon runners but lower scores in weight concerns, personal goals, and self-esteem than shorter-distance runners. Additionally, they noted an inverse relationship between the number of completed ultra-marathons and individual goal achievement, competition, and external recognition. Rozmiarek et al. (2021) found a positive correlation between health orientation and age across all race types.

On the contrary, Prieto-Andreu (2017) evidenced that marathon participants who ran to train more than 50 km per week showed greater motivation for competition than those who ran less than 50 km. In this regard, the runners' sports profile has been the subject of several studies. Malchrowicz-Moško et al. (2020a) explored the influence of race experience on participation motivations but found no statistically significant differences between veteran and amateur participants. However, Ruiz-Juan and Zarauz-Sancho (2014) evidenced a direct correlation between seniority and motivation.

These variations in motivation for participating in running events contribute to forming a distinct social identity and subculture, as analysed by Kazimierzczak et al. (2020). In fact, concerning ultra-marathon participants, three out of four respondents stated that they would not stop training and participating even if they were certain it was harmful to their health (Hoffman and Krouse 2018). Furthermore, intense involvement in competitive sports

fosters the development of event-related tourism and event-related careers, characterised by motivation, travel preferences, spatial and temporal patterns, and event and destination selection (Getz and Andersson 2010). Consequently, an in-depth understanding of the diverse motivational dimensions is relevant for event organisers, facilitating effective sports management and leveraging the event's tourism potential.

Moreover, insights into motivation have practical implications beyond sports management. Nikolaidis and Knechtle (2018) offer helpful insights for fitness coaches, physiologists, and sports psychologists. The cross-cutting nature of motivations to participate in a marathon has also been studied in light of the COVID-19 pandemic. Thus, Rozmiarek et al. (2022) evidenced that those runners who had suffered from the disease scored higher in motivations related to health orientation, recognition, psychological coping, life meaning, and self-esteem. From the perspective of marketing and specific running electronic devices, greater motivation has also been evidenced among participants who use devices that allow them to contact other runners, even in different places (Van Hooren et al. 2020). In fact, companies managing Online Fitness Communities (OFCs) may find that customers with greater motivation for weight loss make more use of self-regulation-related features, users with social motivations make more use of options to establish and maintain contact with other users, and achievement-oriented runners use more features that address tracking their progress (Stragier et al. 2018).

2.2. Social Network Interaction

The emergence of social media has directly impacted the planning, management, dissemination, and development of marathon events (Schoenstedt and Reau 2010). Six types of motivation for posting photographs on social media have been identified: affection, attention-seeking, disclosure, habit, information exchange, and social influence (Malik et al. 2016). Moreover, evidence suggests that women are more inclined than men to share content on social media, interact with others, and use their profile pictures to express emotions (McAndrew and Jeong 2012; Madden et al. 2013). In fact, through their profiles on the social network X, formerly Twitter, female athletes challenge traditional gender roles by highlighting their sports careers in their biographies. However, they tend to visually emphasise their femininity through professional photographs, while male athletes display more images in sports contexts (Coche 2017). Furthermore, running mothers use social media to challenge traditional narratives of motherhood and build online communities that offer support and mutual empowerment (Baldwin 2023). Therefore, it is essential to acknowledge the existence of a motivational dimension related to virtual social interaction, as user-generated content during sporting events can convey different emotional tones, which could affect not only the event's reputation but also that of the host community, both positively and negatively (Kuster et al. 2024).

2.3. Participation in Events That Promote Inclusion

Traditionally, the inclusivity of certain groups in sports events has been addressed from the perspective of charity sports events. This type of event represents special occasions involving physical exertion, where participants raise funds for charitable organisations based on the activity performed (Filo et al. 2011). Indeed, such events are increasingly prevalent worldwide (Palmer 2016). Filo et al. (2009) explored three motivational factors for participating in charitable events: camaraderie, support for the charitable cause, and the physical and sporting challenge. However, increasingly, non-charitable events offer participation categories that allow for the inclusion of participants with diverse characteristics compared to the average participant (González-García et al. 2022). This inclusivity extends to various domains: individuals with disabilities, underrepresentation of participants from a gender perspective, promotion of participation across all age groups, and inclusion of different ethnic, religious, or refugee groups (Benn and Dagkas 2013; Rault et al. 2015; Doidge et al. 2020; O'Brien et al. 2022; Deckman and McDonald 2023; Hiemstra

and Rana 2024). However, no studies address a specific motivational dimension related to the inclusive nature of a non-charitable event.

2.4. Gender Perspectives

Furthermore, from a gender inclusion perspective, there is a pressing need to expand studies focusing on sports events to gain deeper insights into gender motivations and experiences (Fullagar and Pavlidis 2012). The latter includes addressing equity issues in female participation in physical activities, particularly given the substantial increase in female participation in marathon events in recent decades (Deluca et al. 2023). Robert et al. (2011) suggest that while gender differences in relative performance may stem from variations in competitiveness and commitment to training favouring men, the evolving refinement of female participation in such events underscores the importance of not underestimating female performance.

Apart from the sports profile, the socio-demographic profile has garnered attention from the academic community, encompassing age, marital status, and gender perspectives. Malchrowicz-Moško et al. (2020a) found that men were more motivated to start participating in marathons due to the competitive dimension. At the same time, women were driven by factors such as affiliation, psychological coping, life meaning, and self-esteem. These findings parallel those of Nikolaidis et al. (2019), who observed a greater emphasis on men's competitive dimension and coping, self-esteem, and goal achievement dimensions among women. However, Rozmiarek et al. (2021) found no statistically significant differences based on gender or marital status among participants in various race distances, contradicting findings by Malchrowicz-Moško and Waškiewicz (2020) who identified marital status as influencing participants' motivation.

Larumbe-Zabala et al. (2019) noted that men exhibited more ambition and self-confidence than women but tended to overestimate their capabilities. In contrast, women adjusted their outcome estimations more and perceived more outstanding social support than men, with differences attributed to varying motivations toward competition, personal identity, and gender roles and stereotypes.

Deaner et al. (2015) identified gender-based motivation differences among elite athletes, with men displaying greater motivation for competition correlating with more extensive training, while women showed greater motivation for balancing sports practice with studies. This discrepancy could not be attributed to injuries or family burdens. Similarly, León-Guereño et al. (2020, 2021) found statistically significant gender and age differences in motivation but no evidence of marital status influencing motivation. Malchrowicz-Moško et al. (2020b) expanded their study's age range and found that participants under twelve prioritised fun as their primary motivation, with socialisation scoring the lowest.

Studies on motivations for participating in running events highlight a growing interest among women, leading to increased participation. Motivation to participate in specifically female running events does not differ significantly from participation in mixed events (Eagleman 2013). Additionally, women have been reported to exhibit higher motivation scores and a greater degree of commitment and negative addiction compared to men in some studies (Ruiz-Juan and Zarauz-Sancho 2014; Zarauz-Sancho and Ruiz-Juan 2012).

3. Materials and Methods

3.1. Design of the Instrument

This study is based on data obtained through a questionnaire completed by participants of the 37th Córdoba Half-Marathon, held on 26 November 2023. The chosen option to collect the data was a self-administered questionnaire, a method previously used successfully in studies of active sports tourism and participation in sporting events. The questionnaire design was based on previous studies on motivation to participate in this kind of event, specifically marathons and half-marathons, as well as on running practice in general (Barrios-Duarte and Cardoso-Pérez 2002; Woratschek 2002; Ruiz-Juan and Zarauz-Sancho 2014; Malchrowicz-Moško and Rozmiarek 2018; Malchrowicz-Moško and

Poczta 2018; Parra-Camacho et al. 2019; Stenseng et al. 2023). Because the participation of foreign runners was irrelevant, it is essential to note that the study was adapted to the Spanish context by translating and validating the questionnaire in Spanish, thus ensuring its cultural and linguistic adequacy. The translation of the questionnaire was assisted by artificial intelligence (AI), specifically ChatGPT. Moreover, this tool has been employed to improve the English translation of the manuscript crafted by the authors.

The initial questionnaire underwent several revisions. The proposed items were reviewed by a group of experts in sports tourism affiliated with the University of Córdoba. Then, the questionnaire was provided to the event organisers for their approval. Once approved, following Moore et al. (2021), a pretest with a sample of 10 individuals and a pilot study with a sample of 35 were conducted. All of them were athletic students. The objective of this previous phase was to achieve an easily understandable and efficient questionnaire. This questionnaire should be completed in a few minutes without causing respondent fatigue (Hair et al. 2020). At the same time, it had to serve the research objectives. The latter is necessary to achieve reliable, quality results and mitigate the risk of problems arising during data collection (Moore et al. 2021).

The final version of the questionnaire consisted of two sections. In the first one, items corresponding to different motivation dimensions found in the reference scientific literature were included. These items were adapted to the specific characteristics of the event and the research objectives. Exploratory items inspired by studies on inclusive sports events (Darcy et al. 2017) and social network behaviour (Sheldon and Bryant 2016) were also included in the questionnaire. Following Hair et al. (2020), a 7-point Likert scale was chosen, which provides more precise and nuanced results than a 5-point scale. Additionally, it is an odd scale, making the central measure easily identifiable compared to 10-point Likert scale. The 7-point Likert scale has been previously used successfully in studies on motivations to participate in running events (Koronios et al. 2018; Malchrowicz-Moško et al. 2020a), as well as to specifically study motivations to participate in sports events held in the province of Córdoba (Ortega-Pérez et al. 2023; Ramos-Ruiz et al. 2023). Table 1 shows the 22 items of the first section of the questionnaire.

Table 1. Instrument used in research: 22 items.

Code	Item	Reference
MOT01	Feel the pleasure of practising this sport.	Whitehead et al. (2020); Getz and Andersson (2010); Malchrowicz-Moško and Poczta (2018)
MOT02	Maintain or improve my fitness.	
MOT03	To be proud to finish the race.	
MOT04	The emotions it produces in me.	
MOT05	Escape from the daily routine.	
MOT06	I am motivated by the fact that it is an inclusive event.	Eagleman (2013); Bell and Stephenson (2014); Darcy et al. (2017)
MOT07	It is accessible to people with functional diversity.	
MOT08	It motivates me to promote gender equality.	
MOT09	Runners of all ages can participate in this event.	
MOT10	Because of the prestige of this competition.	Whitehead et al. (2020); Getz and Andersson (2010); Malchrowicz-Moško and Poczta (2018)
MOT11	I want to improve my personal mark.	
MOT12	I want to be better than other participants.	
MOT13	Competing with teammates from my track club.	
MOT14	To obtain an optimal result based on my preparation.	
MOT15	Winning the competition.	
MOT16	Meet people with like-minded sports interests.	
MOT17	Socialise before, during, or after the event.	
MOT18	Being able to talk to my friends or family about this event as time goes on.	
MOT19	To make others proud of me.	
MOT20	I want to post photos or videos on my social media.	Getz and Andersson (2010); Stragier et al. (2018); Van Hooren et al. (2020); Sheldon and Bryant (2016)
MOT21	I want to receive likes on the photos or videos I post.	
MOT22	I want to interact on my social networks on the occasion of the Half Marathon.	

The second section included items related to socio-demographic profile: gender, age, level of education, professional category, and income level. This information has been collected in other studies on participation in sports events (León-Guereño et al. 2020; Qiu et al. 2020; Pereira et al. 2021; Thuany et al. 2021; Avello-Viveros et al. 2022).

3.2. Sampling and Data Collection

Data collection was carried out as follows. Initially, a contact and questionnaire distribution phase was conducted with the entire population. After the registration deadline, the event organiser emailed the questionnaire to all participants. The email specified that it was a study for exclusively academic purposes, and participation was voluntary and anonymous. Then, a reinforcement phase was conducted. Four volunteers accompanied the event staff during the bib distribution in this phase. They delivered a QR code-printed card to each participant so they could access the questionnaire. This ensured that the sample corresponded exclusively to event participants, who were informed that the voluntary and anonymous study was conducted for academic purposes. From a total population of 6327 registered participants, 416 completed questionnaires were obtained (80.53% male, 19.47% female). The latter means that for a confidence level of 95%, the estimated margin of error is 4.65%, demonstrating reliability in the data. However, this process could have been affected by two potential biases: the self-selection bias, where participants may differ in characteristics or experiences from those who choose not to participate, and the response bias, which may arise when participants who respond to the questionnaire have different opinions or experiences from those who choose not to participate.

3.3. Data Processing

For the data processing, SPSS Statistics v28.0 software was utilised. The data processing consisted of two phases. In the first phase, tasks were carried out to confirm the reliability of the data and determine the statistical techniques to be used. In the second phase, the data were processed using the statistical methods determined in the first phase to subsequently analyse the results. This second phase consisted, in turn, of two stages.

3.3.1. First Phase: Scale Reliability Analysis and Technique Determination

Cronbach's Alpha (Cronbach 1951) was employed to confirm the internal consistency of the data and, thus, the scale's reliability. The resulting value was 0.887, exceeding the values indicated by reference authors (Nunnally and Bernstein 1994), thus confirming the scale's reliability. Additionally, to analyse the data distribution, the sample size was taken into consideration. Since the database comprised more than 50 cases, the use of the Shapiro–Wilk test (Shapiro and Wilk 1965) was rejected, and the Kolmogorov–Smirnov test (Kolmogorov 1933; Smirnov 1948) was chosen instead. All items yielded a p -value below 0.05, confirming that the data distribution did not correspond to a normal distribution. Therefore, it was determined that the study should proceed through non-parametric tests.

3.3.2. Second Phase: Database Processing

This second phase consisted of two stages, each corresponding to the research objectives. Only the questionnaire section, including motivation items on a 7-point Likert scale, was considered for the first stage. In this first stage, an Exploratory Factor Analysis (EFA) was conducted to verify whether respondents' answers were structured in such a way that dimensions of motivation identified in the previously existing scientific literature, as well as dimensions of motivation intended to be explored in this research, could be identified. EFA is a proper statistical technique for exploring and validating the underlying structure of motivations, allowing for the identification of emerging patterns (Kahn 2006; Pérez and Medrano 2010). The requirements established by Tabachnick and Fidell (2001) regarding sample size were met, as there were more than 300 cases. Moreover, since the number of items was 22, Nunnally and Bernstein (1994)'s criterion recommended exceeding more than ten cases per item. This technique has been successfully used in previous

studies on the motivations and behaviour of participants in sports events (Kruger et al. 2016; León-Quismondo et al. 2023; Cannella et al. 2023). For analysis validation, it was considered that the Kaiser–Meyer–Olkin (KMO) index should yield a value above 0.7 to be considered acceptable (Hair et al. 1999). The KMO index evaluates the suitability of the data for factorial analysis (Comrey and Lee 1992; Pérez and Medrano 2010). The significance level should be below 0.05 (Everitt and Wykes 2001). Only dimensions with an eigenvalue greater than 1 were considered valid, indicating that the dimension explains more variance than would be expected by chance (Kaiser 1960; Kahn 2006). Additionally, only dimensions that grouped at least three items with a loading of not less than 0.4 (Glutting 2002) were considered valid to ensure a strong relationship between the items and the underlying dimension representing that factor. It was intended that the model explain at least 50% of the total accumulated variance (Merenda 1997). If there were items that did not meet these conditions, they were excluded from the study. The study was repeated using only the items that met the previously established conditions. The Cronbach's Alpha of the new scale, as well as the resulting factors, was rechecked. Likewise, the new percentage of total explained variance was compared with the previous one to confirm improvement with the new structure.

For the second stage of the study, both sections of the questionnaire were considered. In the second section of the questionnaire, the first question was considered the independent variable and corresponded to the respondent's gender. There were three options: male, female, and non-binary. However, no participants chose the last option. Therefore, the selected non-parametric test to carry out the study was the Mann–Whitney U test (Mann and Whitney 1947), as the sample was divided by gender into two independent subgroups, males and females. The Mann–Whitney U statistic has been successfully used for the same purpose in previous studies on sports events (Manzano-Sánchez et al. 2020; Simplício-Barreto et al. 2021; Renfree and West 2021). A null hypothesis was established for each item, consistent with no differences between males and females. All null hypotheses for which a p -value below 0.05 was obtained were rejected, thus confirming that for that item, statistically significant differences existed from the perspective of participants' gender.

Following Wilkinson and Task Force (1999)'s recommendations, once the items for which statistically significant differences existed from the perspective of gender were identified, an analysis of the magnitude of these differences was conducted using the Hedges' G statistic (Hedges 1981), to determine the extent of these differences. This statistic was chosen instead of Cohen's D, as both subgroups' sample sizes differed (Perdices 2017). This statistic allows for estimating the magnitude of the differences through its value. Thus, statistically significant differences of small magnitude start from values of 0.2, medium from 0.5, and large from 0.8 points. The Hedges' G statistic has traditionally been used successfully in medicine and psychology (You et al. 2011; Heintz et al. 2019; Martín-María et al. 2023). In the tourism (Garcés et al. 2020) or sports (Barrenetxea-García 2020) fields, its use is still scarce, as most research studies that examine statistically significant differences in motivations of sports tourists or practitioners conclude by confirming the existence of these differences. However, they do not delve into them. Therefore, one of the contributions of this study is to provide further insight into this area.

Lastly, a power analysis was conducted. The usefulness of this analysis lies in determining the validity of the findings (Cárdenas-Castro and Arancibia-Martín 2014), with values ranging from 0 to 1, where those closer to 0 are unreliable, and those closer to 1 are entirely reliable.

4. Results

In the 37th Córdoba Half-Marathon, 6327 runners participated. The collected sample consisted of 416 questionnaires, so with a confidence level of 95%, the sampling error is, for informative purposes, 4.65%. Therefore, the sample is reliable. Table 2 presents the socio-demographic profile information of the surveyed participants.

Table 2. Socio-demographic profile of participants.

Gender		Monthly Household Income	
Male	80.53%	Very high	0.24%
Female	19.47%	High	5.29%
Generation		Mid-High	23.56%
Boomers	2.64%	Medium	50.72%
Generation X	53.13%	Mid-Low	13.70%
Generation Y	34.38%	Low	5.05%
Generation Z	9.86%	Very low	1.44%
Educational Level		Occupation	
Currently studying	16.11%	Related to physical activity	17.55%
VET	5.05%	Not related to physical act	71.39%
Bachelor completed	67.55%	Retired	3.13%
Any other	11.30%	Any other	7.93%

These data reveal that the profile of the average participant corresponds to a man of approximately 43 years old, with university education, whose profession does not require being in good physical shape, and a medium income level. Additionally, the statistical-descriptive results of each item in the first section of the questionnaire are shown in Table 3.

Table 3. Descriptive analysis.

Item	Mean	St. Dv.	Item	Mean	St. Dv.
MOT01	6.57	0.040	MOT12	3.10	0.098
MOT02	6.41	0.049	MOT13	3.02	0.112
MOT03	6.59	0.042	MOT14	5.72	0.077
MOT04	6.48	0.046	MOT15	1.72	0.076
MOT05	5.67	0.074	MOT16	4.36	0.097
MOT06	5.40	0.085	MOT17	4.94	0.094
MOT07	5.65	0.081	MOT18	5.15	0.088
MOT08	5.52	0.092	MOT19	4.22	0.102
MOT09	6.15	0.065	MOT20	2.92	0.105
MOT10	5.04	0.086	MOT21	2.30	0.089
MOT11	4.84	0.096	MOT22	2.53	0.096

Items MOT01, MOT03, and MOT09 offer very high scores, with values that exceed 6.5 in some cases. The latter suggests that participants are highly motivated by the pleasure of practising the sport, feeling proud upon completing the race, and the participation of runners of all ages. Other items, MOT02, MOT04, and MOT14, also show relatively high average scores, indicating a high motivation related to maintaining or improving physical condition, the emotions generated by the event, and achieving an optimal result based on preparation. The scores of items MOT16, MOT17, and MOT18 suggest moderate motivation in terms of socialisation before, during, or after the event and the possibility of talking with friends or family about the event over time. Items MOT15, MOT19, MOT20, MOT21, and MOT22 show lower average scores, indicating less motivation. These elements are related to winning the competition, making others proud, posting on social media, and interacting on social networks. The latter suggests that competition and external recognition are not the primary motivations for participants. The data on dispersion, skewness, and kurtosis indicate the need for further analysis to determine the underlying structure of motivations.

The analyses and results before the Exploratory Factor Analysis (EFA) were as follows. The Cronbach's Alpha of the entire scale yielded a value of 0.887. This value is above the reference value of 0.7 for determining the scale's reliability. The Kaiser-Meyer-Olkin measure (KMO) obtained a result of 0.872, exceeding the recommended value of 0.6. Bartlett's sphericity test determined statistical significance, indicating the existence of an

internal structure. The Varimax orthogonal rotation method was used to maximise factor loading with Kaiser normalisation. The extraction method used was maximum likelihood. As a result, five factors with eigenvalues greater than 1 were obtained. Once the loadings were summed, the percentage of total variance explained by these factors was 55.28%. The Chi-square value for this first analysis was 338.475, indicating statistical significance, and thus considered appropriate for goodness of fit.

The rotated factor matrix was analysed initially, confirming that all factors contained at least one grouping of three items and that each item with a loading substantially greater than 0.4 was linked to a single factor. However, upon checking the loadings, it was observed that items MOT02, MOT05, MOT10, MOT14, and MOT19 did not meet the adjustment and minimum required loading criteria, so they were systematically removed from the scale until all formal study requirements were met. The final scale consisted of a total of 17 items. Table 4 shows the results of the second EFA with the new scale.

Table 4. Total explained variance.

Factor	Initial Eigenvalues			Sums of Squared Loadings for Extraction			Sums of Squared Loadings for Rotation		
	Total	% var.	% acum.	Total	% var.	% acum.	Total	% var.	% acum.
1	5.624	33.083	33.083	5.242	30.833	30.833	2.880	16.941	16.941
2	2.787	16.394	49.478	2.469	14.526	45.359	2.489	14.644	31.585
3	1.474	8.669	58.147	1.106	6.503	51.862	1.758	10.342	41.927
4	1.278	7.517	65.664	0.887	5.218	57.080	1.758	10.342	52.269
5	1.072	6.304	71.968	0.899	5.289	62.370	1.717	10.101	62.370
6	0.753	4.427	76.395						
7	0.685	4.029	80.424						
8	0.612	3.602	84.026						
9	0.521	3.063	87.089						
10	0.402	2.362	89.451						
11	0.379	2.232	91.682						
12	0.362	2.127	93.810						
13	0.301	1.770	95.579						
14	0.256	1.504	97.083						
15	0.191	1.125	98.208						
16	0.159	0.935	99.143						
17	0.146	0.857	100.000						

There is evidence of an improvement in the explanation of the total explained variance, which increases from 55.28% to 62.37%. The underlying structure of five factors is maintained. However, when adding the squared loadings of the rotation, each factor exceeds 10% of the explained variance. In fact, the following results are obtained. The KMO measure is 0.848, above 0.6; the sphericity test shows statistical significance; the goodness of fit test yields a Chi-square value of 87.622 points and statistical significance.

All items meet the requirements and conditions stipulated in the study. Each item is linked to a single factor with a substantially higher minimum loading than 0.4, and each factor consists of at least three items. Considering the nature of each item, the underlying structure of motivation describes the following dimensions of motivation. These results address Research Question 1.

The rotated component matrix is shown in Table 5 and it is composed by the following factors and items. Factor 1 (F1) corresponds to a dimension of motivation related to participation in inclusive events: MOT07, I am motivated by it being an event accessible to people with disabilities; MOT06, I am motivated by it being an inclusive event; MOT08, I am motivated by it promoting gender equality; MOT09, I am motivated by runners of all ages participating. Together, these items explain 16.941% of the total variance of motivation. This factor has been labelled the inclusive dimension. Factor 2 (F2) corresponds to a dimension of motivation related to social media interaction: MOT20, I want to post photos or videos on my social networks; MOT21, I want to receive “likes” and “thumbs up”

on the photos or videos I post; MOT22, I want to interact on my social networks because of the Half Marathon. The grouping of these items explains 14.644% of the total variance of motivation. This factor has been labelled the virtual interaction dimension. Factor 3 (F3) corresponds to a dimension of motivation related to social interaction regarding the event: MOT17, socialise before, during, or after the event; MOT16, meet people with similar sports interests; MOT18, be able to talk to my friends or family about this event over time. This factor explains 10.342% of the total variance of motivation. This factor has been labelled the socialisation dimension. Factor 4 (F4) corresponds to a dimension of motivation related to sports practice and the individual positive reaction that this practice provokes in the individual: MOT04, the emotions it produces in me; MOT03, feeling proud to finish the race; MOT01, feeling the pleasure of practising this sport. Together, this factor explains 10.342% of the total variance of motivation. This factor has been labelled the sports hedonism dimension. Factor 5 (F5) corresponds to a dimension related to sports practice and the results obtained due to participation and in comparison with other participants: MOT12, I want to be better than other participants; MOT15, winning the competition; MOT13, competing with fellow members of my athletics club; MOT11, I want to improve my personal best. This factor explains 10.101% of the total variance of motivation. This factor has been labelled the competitive dimension.

Table 5. Rotated component matrix.

Items	F1	F2	F3	F4	F5
MOT07	0.901				
MOT06	0.817				
MOT08	0.742				
MOT09	0.676				
MOT20		0.860			
MOT21		0.858			
MOT22		0.856			
MOT17			0.831		
MOT16			0.689		
MOT18			0.513		
MOT04				0.909	
MOT03				0.564	
MOT01				0.527	
MOT12					0.868
MOT15					0.519
MOT13					0.461
MOT11					0.437

After determining the five factors that describe the underlying structure revealed by this study, a reliability analysis of the scale for each of these factors and the total scale is conducted. This information is summarised in Table 6.

Table 6. Cronbach's Alpha of each factor.

Factor	Cronbach's Alpha	Items
Inclusive event	0.898	4
Virtual interactivity	0.929	3
Socialisation	0.824	3
Sports hedonism	0.720	3
Competitive	0.680	4
Total	0.863	17

After analysing the underlying structure of the motivation dimensions for the entire sample, the existence of statistically significant differences from a gender perspective was tested for each item using the Mann–Whitney U statistic. Additionally, the extent of

these differences and the representativeness of the results based on statistical power were estimated. Differences were found in eight out of the seventeen items. These findings address Research Question 2.

The extent of all differences has been calculated and falls within the moderate range, ranging from small to medium. In all these items, the average score was higher for women than men. The data reveal differences in all motivation dimensions except for the socialisation dimension. The latter implies that both men and women feel the same intensity in motivation to share the experience with others, interact with people with similar interests, and be able to talk about this event in the future.

The dimension for which the most significant differences are made is the inclusive one. In this regard, it is the only motivation dimension for which differences are found in all items. Women score higher than men on items related to the inclusive nature of the competition, especially item MOT08, which is related to gender inclusivity. From the perspective of the virtual dimension, women are more motivated to post photos and videos related to their participation in the event on their social networks. Regarding the dimension of sporting hedonism, women show greater motivation to participate due to the emotions it brings them. In fact, this difference offers the highest statistical power. Finally, regarding the sports-competitive dimension, there are statistically significant differences favouring women over men, moderately regarding winning the competition, and mainly in surpassing their record, demonstrating a greater willingness to surpass themselves than men. These results, presented in Table 7, respond to Research Question 3.

Table 7. Differences by gender, effect size, and statistical power.

Factors and Items	Male (M)			Female (F)			Diferencias						
	Median	St. Dv.	Range	Median	St. Dv.	Range	Sig.	U	Mean (M)	Mean (F)	G	Power	
F1	MOT07	6	1.630	6	7	1.710	6	0.026	15,604.5	5.59	5.99	0.243	0.599
	MOT06	6	1.738	6	7	1.706	6	0.037	15,514.0	5.32	5.70	0.219	0.555
	MOT08	6	1.893	6	7	1.684	6	0.003	16,222.0	5.41	5.99	0.313	0.854
	MOT09	7	1.323	6	7	1.382	6	0.037	15,344.0	6.12	6.41	0.219	0.522
F2	MOT20	2	2.025	6	3	2.460	6	0.033	15,552.0	2.78	3.49	0.336	0.773
F3	None												
F4	MOT04	7	0.972	6	7	0.736	4	0.007	15,727.5	6.42	6.69	0.29	0.867
F5	MOT15	1	1.455	6	1	1.823	6	0.014	15,349.0	1.64	2.05	0.267	0.590
	MOT11	5	1.915	6	6	2.032	6	0.008	16,094.0	4.73	5.28	0.284	0.710

5. Discussion

This research offers a new perspective on the motivation to participate in half-marathon sports events. The MOMS scale (Masters et al. 1993) has been tested in various running events held in different geographies and types of races (Ruiz-Juan and Zarauz-Sancho 2011; Duclos-Bastías et al. 2021; Dybała 2013; Hongwei and Resza 2021). In addition to validating it, other studies have modified it to explore new dimensions of motivation (Ridinger et al. 2012; Zach et al. 2017). Similarly, other authors have based their motivation study on other instruments (Bell and Stephenson 2014; Parra-Camacho et al. 2019). While Bell and Stephenson (2014) generally address altruistic motivation to participate in an event, this study offers a new dimension of motivation based on being part of a regular half-marathon event, specifically inclusive from the perspective of gender equality, people with disabilities, as well as people of all ages. Previous studies have shown that the structure of motivation to participate in specifically female events or in mixed events is similar (Eagleman 2013).

This study's results align with previous research conducted in Spain, where, generally, women offered higher motivation scores than men (Zarauz-Sancho and Ruiz-Juan 2012; Ruiz-Juan and Zarauz-Sancho 2014). Additionally, this study shows that women score higher in motivation related to competition than men, especially in surpassing their personal best. Furthermore, although, in some studies, no differences have been found between men and women (Rozmiarek et al. 2021), generally speaking, there is a wealth of conclusions indicating that within the structure of motivation, there are differences where men show greater motivation for competition and women for socialisation (Doppelmayr

and Molkenhain 2004; Deaner et al. 2015; Larumbe-Zabala et al. 2019; Malchrowicz-Moško et al. 2020a).

Regarding socialisation, other studies have shown runners' interest in sharing their experience through electronic devices (Van Hooren et al. 2020) and even being in contact with other runners through specific online communities (Stragier et al. 2018). The results of this study indicate that social interaction through social networks is the second dimension of motivation that explains the highest percentage of variance. Furthermore, women show higher motivation than men to share images of their participation in the event on their profiles.

The rest of the motivations evidenced by this study coincide with the findings of other recent research conducted in various types of races and different geographies (Duclos-Bastías et al. 2021; Hongwei and Resza 2021; Pereira et al. 2021).

The findings of this study can be attributed to several factors inherent to half-marathon events and the broader socio-cultural context. The emphasis on socialisation and community engagement may stem from the inclusive and supportive environment fostered by these events, where participants often form lasting connections with fellow runners and derive motivation from shared experiences. Additionally, the prevalence of personal achievement and goal-setting motivations may reflect the intrinsic satisfaction derived from pushing one's limits and achieving individual milestones. The inclusive nature of half-marathon events, which welcome participants of diverse backgrounds and abilities, likely contributes to the camaraderie and mutual support observed among participants. Moreover, the observed gender differences in motivation may be influenced by societal norms and expectations regarding competitiveness and social interaction. While men may be socialised to prioritise competition and performance, women may place greater value on social connections and support networks. Overall, the convergence of these factors underscores the complex interplay between individual motivations, social dynamics, and event characteristics in shaping participants' experiences and motivations in half-marathon events.

Furthermore, the results of this study indicate that women are more motivated than men to post photos on social networks on the occasion of their participation in the half-marathon. The latter is consistent with the findings of McAndrew and Jeong (2012) and Madden et al. (2013). In addition, these authors stated that the emotional charge of motivation took precedence over the competitive one, as shown by the research results for the dimension of sports hedonism. In fact, the point that matches both dimensions provided by this study, virtual social interaction and sports hedonism, coincides with the female behaviour explained by Baldwin (2023) about the creation of online communities of support and female empowerment. This empowerment is linked, at the same time, to the motivation to participate in events that promote inclusion, also found and provided by this research.

6. Conclusions

The findings of this study provide significant insights into the evolving landscape of gender dynamics within sports racing events, particularly in the context of half-marathon participation. Despite the socio-demographic profile of participants in running events reflecting a higher male presence, this study provides further evidence of the social changes occurring in gender dynamics, specifically in participation in sports racing events. The scores offered by women in motivation dimensions related to competition, self-improvement, and posting images on social media demonstrate a shift that breaks gender stereotypes and previous behaviours of women in such events. Increasingly, women are gaining prominence in sports on their own merits, and the results of this study are a testament to that. Organisers of these events will also find valuable insights in these results to address the needs and motivations of female runners.

Moreover, a deeper understanding of these motivations for participating in sports racing events provides valuable information for sports psychologists, coaches, and athletic

clubs. Furthermore, the results related to motivation for posting images on social media can be addressed by social media managers and event communication managers by giving greater online visibility to women and people of all ages and with disabilities. The latter will help address the motivations of all runners, specifically female participants. In addition, extending these ideas, the organising body is encouraged to implement a series of strategic initiatives. Firstly, developing inclusive training and support programs tailored to address runners' competitive and social needs will provide valuable training and support opportunities for participants across all proficiency levels and abilities.

Furthermore, nurturing the formation of communities and support networks within the event framework will cultivate a stronger sense of camaraderie and belonging among participants, serving as a platform for exchanging experiences and motivations. Additionally, offering customisable options in event activities and services, such as mixed-race categories and accommodations for individuals with disabilities, will underscore the event's commitment to embracing diversity and ensuring an inclusive experience for all attendees. Enhancing visibility across social media platforms, particularly by highlighting runners of varying ages and abilities, will deepen engagement and foster community among participants. Lastly, continuous monitoring and evaluation of participant feedback will enable the organising entity to identify areas for enhancement and refine strategies, thereby ensuring the sustained success and inclusivity of the event in the long term.

This research is limited by the absence of previous reference studies for the same event, so it would be necessary to repeat the study in the next edition to compare trends in the participation of female runners, as well as the evolution in motivations. Additionally, the use of other methodologies to corroborate the results obtained, such as an Artificial Neural Network (ANN) of the Multilayer Perceptron (MLP) type, is suggested. Furthermore, it is proposed to deepen the research by conducting a study using a Partial Least Squares Structural Equation Modeling (PLS-SEM) to estimate the predictive nature of motivations and satisfaction on participants' future intentions, event loyalty, and destination loyalty.

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References

- Avello-Viveros, Carlos, Rodolfo Ulloa-Mendoza, Samuel Duran-Aguero, Rodrigo Carrasco-Castro, and Rafael Pizarro-Mena. 2022. Association between level of Physical Activity and Motivation in older people who practice running. *Retos* 46: 431–41. [CrossRef]
- Baldwin, Kate. 2023. Run like a mother: Running, race, and the shaping of motherhood under COVID-19. *Feminist Media Studies* 23: 2546–61. [CrossRef]
- Barrenetxea-García, Josu. 2020. Influencia de factores antropométricos, fisiológicos, edad relativa y entrenamiento en el rendimiento de waterpolo. Ph.D. dissertation, Universidad del País Vasco, Bilbao, Spain. Available online: <http://hdl.handle.net/10810/50324> (accessed on 10 October 2023).
- Barrios-Duarte, Rene, and Laura Cardoso-Pérez. 2002. Motivación para competir en corredores populares cubanos. *EFDeportes.com*. Available online: <https://www.efdeportes.com/efd47/motiv.htm> (accessed on 10 October 2023).
- Bell, Nicolette, and Amber L. Stephenson. 2014. Variation in motivations by running ability: Using the theory of reasoned action to predict attitudes about running 5k races. *Journal of Policy Research in Tourism, Leisure and Events* 6: 231–47. [CrossRef]
- Benn, Tansin, and Symeon Dagkas. 2013. The Olympic Movement and Islamic culture: Conflict or compromise for Muslim women. *International Journal of Sport Policy* 52: 281–94. [CrossRef]
- Cannella, Valentina, Feliciano Villar, and Rodrigo Serrat. 2023. Competing at age 55 and over. Reasons why older athletes participate in sport. *Educational Gerontology* 49: 866–80. [CrossRef]
- Cárdenas-Castro, José Manuel, and Héctor Arancibia-Martín. 2014. Potencia estadística y cálculo del tamaño del efecto en G*Power: Complementos a las pruebas de significación estadística y su aplicación en psicología. *Salud & Sociedad* 5: 210–24. [CrossRef]
- Coche, Roxane. 2017. How Athletes Frame Themselves on Social Media: An Analysis of Twitter Profiles. *Journal of Sports Media* 12: 89–112. [CrossRef]
- Comrey, Andrew L., and Howard B. Lee. 1992. *A First Course in Factor Analysis*. Nueva York: Psychology Press. [CrossRef]
- Cronbach, Lee J. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika* 16: 297–334. [CrossRef]
- Darcy, Simon, Daniel Lock, and Tracy Taylor. 2017. Enabling inclusive sport participation: Effects of disability and support needs on constraints to sport participation. *Leisure Sciences* 39: 20–41. [CrossRef]
- Deaner, Robert O., Aaron Lowen, William Rogers, and Eric Saksa. 2015. Does the sex difference in competitiveness decrease in selective sub-populations? A test with intercollegiate distance runners. *PeerJ* 2015: e884. [CrossRef]
- Deckman, Melissa, and Jared McDonald. 2023. Uninspired by Old White Guys: The Mobilizing Factor of Younger, More Diverse Candidates for Gen Z Women. *Politics and Gender* 19: 195–219. [CrossRef]
- Deluca, Jaime R., Samuel M. Clevenger, Hannah A. Zabriskie, and Rian Q. Landers-Ramos. 2023. Exploring Women's Marathon Participation in the United States, 1980–2019. *Journal of Cultural Analysis and Social Change* 8. [CrossRef]
- Doidge, Mark, Marc Keech, and Elisa Sandri. 2020. 'Active integration': Sport clubs taking an active role in the integration of refugees. *International Journal of Sport Policy and Politics* 12: 305–19. [CrossRef]
- Doppelpmayr, Michael, and Anke Molkenhuth. 2004. Motivation of participants in adventure ultramarathons compared to other foot races. *Biology of Sport* 21: 319–23.
- Duclos-Bastías, Daniel, Felipe Vallejo-Reyes, Frano Giakoni-Ramírez, and David Parra-Camacho. 2021. Validation of the Marathon Motivation Scale in Chile. *Journal of Human Sport and Exercise* 16: 348–60. [CrossRef]
- Dybała, Maciej. 2013. The Polish adaptation of the Motives of Runners for Running Questionnaire. *Rozprawy Naukowe* 40: 118–28.
- Eagleman, Andrea N. 2013. Attitudes, motivation, and commitment of runners who do and do not participate in women-only road races. *International Journal of Sport Management and Marketing* 13: 200–17. [CrossRef]
- Everitt, Brian S., and Til Wykes. 2001. *Diccionario de Estadística para Psicólogos*. España: Ariel. ISBN 84-344-0893-7.
- Filo, Kevin R., Daniel C. Funk, and Danny O'Brien. 2009. The meaning behind attachment: Exploring camaraderie, cause, and competency at a charity sport event. *Journal of Sport Management* 23: 361–87. [CrossRef]
- Filo, Kevin R., Daniel C. Funk, and Danny O'Brien. 2011. Examining Motivation for Charity Sport Event Participation: A Comparison of Recreation-Based and Charity-Based Motives. *Journal of Leisure Research* 43: 491–518. [CrossRef]
- Fullagar, Simone, and Adele Pavlidis. 2012. "It's all about the journey": Women and cycling events. *International Journal of Event and Festival Management* 3: 149–70. [CrossRef]
- Garcês, Soraia, Margarida Pocinho, Saul Neves de Jesus, Ester Camara, and Patricia Martins. 2020. Exploring creativity and wellbeing characteristics of Portuguese tourists. *Journal of Spatial and Organizational Dynamics* 3: 4–15.
- Getz, Don, and Tommy D. Andersson. 2010. The event-tourist career trajectory: A study of high-involvement amateur distance runners. *Scandinavian Journal of Hospitality and Tourism* 10: 468–91. [CrossRef]
- Glutting, Joseph J. 2002. Some psychometric properties of a system to measure ADHD Among College Students: Factor Pattern, Reliability, and One-Year Predictive Validity. *Measurement and Evaluation in Counseling and Development* 34: 194–209. [CrossRef]
- González-García, Rómulo Jacobo, Gabriel Martínez-Rico, Francesc Bañuls-Lapuerta, and Ferran Calabuig. 2022. Residents' Perception of the Impact of Sports Tourism on Sustainable Social Development. *Sustainability* 14: 1232. [CrossRef]
- Hair, Joe F., Michael Page, and Niek Brunsveld. 2020. *Essentials of Business Research Methods*, 4th ed. New York: Routledge. [CrossRef]
- Hair, J. F., R. E. Anderson, R. L. Tatham, and W. Black. 1999. *Análisis Multivariante*. Madrid: Prentice Hall.
- Hedges, Larry V. 1981. Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics* 6: 106–28. [CrossRef]

- Heintz, Sonja, Christoph Kramm, and Christoph Ruch. 2019. A meta-analysis of gender differences in character strengths and age, nation, and measure as moderators. *The Journal of Positive Psychology* 14: 103–12. [\[CrossRef\]](#)
- Hiemstra, Marit, and Marit Rana. 2024. Sensing inclusion among visually impaired and guide runners. *International Review for the Sociology of Sport* 59: 22–37. [\[CrossRef\]](#)
- Hoffman, Martin D., and Rhonna Krouse. 2018. Ultra-obligatory running among ultramarathon runners. *Research in Sports Medicine* 26: 211–21. [\[CrossRef\]](#)
- Hongwei, Yan, and Ayatullah Muhammad Resza. 2021. Running motivations of non-elite long-distance runners in Indonesia. *Journal of Physical Education and Sport* 21: 2288–94. [\[CrossRef\]](#)
- Kahn, Jeffrey H. 2006. Factor analysis in Counselling Psychology research, training and practice. *The Counselling Psychologist* 34: 684–718. [\[CrossRef\]](#)
- Kaiser, Henry F. 1960. The application of electronic computers to factor analysis. *Educational and Psychological Measurement* 20: 141–51. [\[CrossRef\]](#)
- Kazimierczak, Marek, Agata Dąbrowska, Katarzyna Adamczewska, and Ewa Malchrowicz-Moško. 2020. The impact of modern ultramarathons on shaping the social identity of runners. The case study of Karkonosze Winter Ultramarathon. *International Journal of Environmental Research and Public Health* 17: 116. [\[CrossRef\]](#)
- Kolmogorov, A. 1933. Sulla determinazione empirica di una legge di distribuzione. *Giornale dell'Istituto Italiano degli Attuari* 4: 83–91.
- Koronios, Konstantinos, Marina Psiloutsikou, and Athanasios Kriemadis. 2018. Motives and constraints of participants in running events. *Education and Training* 60: 443–57. [\[CrossRef\]](#)
- Kruger, Martinette, Kirstin Hallmann, and Melville Saayman. 2016. Intention of mountain bikers to return. *South African Journal for Research in Sport, Physical Education and Recreation* 38: 95–111.
- Kuster, Inés, Natalia Vila-López, Elisabet Mora, and María Isabel P. Riquelme-Martínez. 2024. Analysing user-generated content in sports events through the lens of the Spain brand. *Journal of Marketing Analytics* 1–13. [\[CrossRef\]](#)
- Larumbe-Zabala, Eneko, J. Joaquin García-Lluch, Eva Agea, and David Peris-Delcampo. 2019. Goal-setting strategy and psychological differences in marathon runners compared by gender. *Journal of Human Sport and Exercise* 14: 725–35. [\[CrossRef\]](#)
- León-Guereño, Patxi, Héctor Galindo-Domínguez, Eneko Balerdi-Eizemendi, Mateusz Rozmiarek, and Ewa Malchrowicz-Moško. 2021. Motivation behind running among older adult runners. *BMC Sports Science, Medicine and Rehabilitation* 13: 138. [\[CrossRef\]](#)
- León-Guereño, Patxi, Miguel Angel Tapia-Serrano, Arkaitz Castañeda-Babarro, and Ewa Malchrowicz-Mosko. 2020. Do sex, age, and marital status influence the motivations of amateur marathon runners? The Poznan Marathon case study. *Frontiers in Psychology* 11: 2151. [\[CrossRef\]](#)
- León-Quismondo, Jairo, José Bonal, Pablo Burillo, and Álvaro Fernández-Luna. 2023. How can we improve running events? The IPA4RE Questionnaire and its Potential Impact on the Experience of Runners. *International Journal of Environmental Research and Public Health* 20: 1703. [\[CrossRef\]](#)
- Loughran, Mary Jo, Deanna Hamilton, and Meredith Mcginley. 2013. Motivations and perceived benefits of marathoning: An exploratory study. *Athletic Insight* 15: 113.
- Madden, M., A. Lenhart, M. Duggan, S. Cortesi, and U. Gasser. 2013. *Teens and Technology 2013*. Washington: Pew Internet & American Life Project.
- Malchrowicz-Moško, Ewa, and Joanna Poczta. 2018. Running as a form of therapy socio-psychological functions of mass running events for men and women. *International Journal of Environmental Research and Public Health* 15: 2262. [\[CrossRef\]](#) [\[PubMed\]](#)
- Malchrowicz-Moško, Ewa, and Mateusz Rozmiarek. 2018. Why women run? Motivations for running in a half-marathon among local runners and sport tourists. *Olimpianos—Journal of Olympic Studies* 2: 475–88. [\[CrossRef\]](#)
- Malchrowicz-Moško, Ewa, and Zbigniew Waśkiewicz. 2020. The impact of family life and marital status on the motivations of ultramarathoners: The Karkonosze Ultramarathon case study. *International Journal of Environmental Research and Public Health* 17: 6596. [\[CrossRef\]](#) [\[PubMed\]](#)
- Malchrowicz-Moško, Ewa, Patxi León-Guereño, Miguel Angel Tapia-Serrano, Pedro Antonio Sánchez-Miguel, and Zbigniew Waśkiewicz. 2020a. What encourages Physically Inactive People to Start Running? An Analysis of Motivations to Participate in Parkrun and City Trail in Poland. *Frontiers in Public Health* 8: 581017. [\[CrossRef\]](#)
- Malchrowicz-Moško, Ewa, Arkaitz Castañeda-Babarro, and Patxi León Guereño. 2020b. On the way to the marathon-motivation for participating in mass running events among children and adolescents: Results of the Poznan Half-Marathon Pilot Study. *International Journal of Environmental Research and Public Health* 17: 5098. [\[CrossRef\]](#) [\[PubMed\]](#)
- Malik, Aqdas, Amandeep Dhir, and Marko Nieminen. 2016. Uses and Gratifications of digital photo sharing on Facebook. *Telematics and Informatics* 33: 129–38. [\[CrossRef\]](#)
- Mann, H. B., and D. R. Whitney. 1947. On a Test of Whether one of Two Random Variables is Stochastically Larger than the Other. *The Annals of Mathematical Statistics* 18: 50–60. [\[CrossRef\]](#)
- Manzano-Sánchez, David, Lucas Postigo-Pérez, Manuel Gómez-López, and Alfonso Valero-Valenzuela. 2020. Study of the motivation of Spanish amateur runners based on training patterns and gender. *International Journal of Environmental Research and Public Health* 17: 8185. [\[CrossRef\]](#) [\[PubMed\]](#)
- Martín-María, Natalia, Elvira Lara, María Cabello, Beatriz Olaya, Josep Maria Haro, Marta Miret, and José Luis Ayuso-Mateos. 2023. To be happy and behave in a healthier way. A longitudinal study about gender differences in the older population. *Psychology & Health* 38: 307–23. [\[CrossRef\]](#)

- Masters, Kevin S., Benjamin M. Ogles, and Jeffrey A. Jolton. 1993. The development of an instrument to measure motivation for marathon running: The motivations of marathoners scales (MOMS). *Research Quarterly for Exercise and Sport* 64: 134–43. [CrossRef] [PubMed]
- McAndrew, Francis T., and Hye Sun Jeong. 2012. Who does what on Facebook? Age, sex, and relationship status as predictors of Facebook use. *Computers in Human Behavior* 28: 2359–65. [CrossRef]
- Merenda, Peter. 1997. A guide to the proper use of Factor Analysis in the conduct and reporting of research: Pitfalls to avoid. *Measurement and Evaluation in Counselling and Evaluation* 30: 156–63. [CrossRef]
- Moore, Zachary, Dana E. Harrison, and Joe Hair. 2021. Data quality assurance begins before data collection and never ends: What marketing researchers absolutely need to remember. *International Journal of Market Research* 63: 693–714. [CrossRef]
- Nikolaidis, Pantelis T., Aïna Chalabaev, Thomas Rosemann, and Beat Knechtle. 2019. Motivation in the Athens Classic Marathon: The role of sex, age, and performance level in Greek recreational marathon runners. *International Journal of Environmental Research and Public Health* 16: 2549. [CrossRef] [PubMed]
- Nikolaidis, Pantelis T., and Beat Knechtle. 2018. Pacing strategies in the 'Athens Classic Marathon': Physiological and psychological aspects. *Frontiers in Psychology* 9: 1539. [CrossRef] [PubMed]
- Nunnally, J. C., and I. H. Bernstein. 1994. *Psychometric Theory*, 3rd ed. New York: McGraw-Hill.
- O'Brien, Emma, Stacy M. Warner, and Melanie Sartore-Baldwin. 2022. Eliminating Barriers to Youth Sport in Greenville, North Carolina. *Sport Management Education Journal* 16: 86–94. [CrossRef]
- Ortega-Pérez, Laura, Laura Guzmán Dorado, Lucía García-García, and José E. Ramos-Ruíz. 2023. Factores motivacionales del cicloturismo: La carrera MTB Guzmán El Bueno de Córdoba (España). In *Avances y promoción en el desarrollo turístico de Melilla*. Edited by Juan Antonio Marmolejo-Martín and Salvador Moral-Cuadra. pp. 237–48. ISBN 978-84-1170-713-8. Available online: <https://dialnet.unirioja.es/servlet/articulo?codigo=9296181> (accessed on 17 February 2024).
- Palmer, Catherine. 2016. Research on the run: Moving methods and the charity 'thon'. *Qualitative Research in Sport, Exercise and Health* 8: 225–36. [CrossRef]
- Parra-Camacho, David, María Huertas González-Serrano, Rómulo Jacobo González-García, and Ferran Calabuig Moreno. 2019. Sporting habits of urban runners: Classification according to their motivation. *International Journal of Environmental Research and Public Health* 16: 4990. [CrossRef]
- Perdices, Michael. 2017. Null hypothesis significance testing, p-values, effects sizes and confidence intervals. *Brain Impairment* 19: 70–80. [CrossRef]
- Pereira, Hugo V., António L. Palmeira, Eliana V. Carraça, Inês Santos, Marta M. Marques, and Pedro J. Teixeira. 2021. Running prevalence in Portugal: Socio-demographic, behavioral and psychosocial characteristics. *PLoS ONE* 16: e0245242. [CrossRef] [PubMed]
- Pérez, Edgardo R., and Leonardo Adrián Medrano. 2010. Análisis Factorial Exploratorio: Bases Conceptuales y Metodológicas. *Revista Argentina de Ciencias del Comportamiento* 2: 58–66.
- Prieto-Andreu, J. 2017. Sport experience, anxiety and motivation in popular runners. *Cuadernos de Psicología del Deporte* 17: 51–58.
- Qiu, Yajun, Haibo Tian, Wenting Zhou, Yejiang Lin, and Jie Gao. 2020. Why do people commit to long distance running: Serious leisure qualities and leisure motivation of marathon runners. *Sport in Society* 23: 1256–72. [CrossRef]
- Ramos-Ruiz, Jose E., David Algaba-Navarro, Laura Guzmán-Dorado, and Lucia Garcia-García. 2023. Factores de motivación para participar en eventos deportivos de motor: El Rallye Sierra Morena 2023. In *Avances y promoción en el desarrollo turístico de Melilla*. Edited by Juan Antonio Marmolejo-Martín and Salvador Moral-Cuadra. pp. 249–57. ISBN 978-84-1170-713-8. Available online: <https://dialnet.unirioja.es/servlet/articulo?codigo=9296180> (accessed on 17 February 2024).
- Renfree, Gillian, and Julia West. 2021. Motivation and commitment of volunteers at parkrun events. *Managing Sport and Leisure* 29: 56–69. [CrossRef]
- Ridinger, Lynn L., Daniel C. Funk, Jeremy S. Jordan, and Kyriaki (Kiki) Kaplanidou. 2012. Marathons for the Masses: Exploring the Role of Negotiation-Efficacy and Involvement on Running Commitment. *Journal of Leisure Research* 44: 155–78. [CrossRef]
- Robert, Deaner, Kevin Masters, Ogles Benjamin, and Rick A LaCaille. 2011. Marathon performance as a predictor of competitiveness and training in men and women. *Journal of Sport Behavior* 34: 325–42.
- Roult, Romain, Isabelle Brunet, Émilie Belley-Ranger, Héléne Carbonneau, and Julie Fortier. 2015. Inclusive Sporting Events in Schools for Youth With Disabilities in Quebec: Social, Educational, and Experiential Roles of These Activities According to the Interviewed Practitioners. *SAGE Open* 5: 2158244015604696. [CrossRef]
- Rozmiarek, Mateusz, Ewa Malchrowicz-Moško, Patxi León-Guereño, Miguel Ángel Tapia-Serrano, and Grzegorz Kwiatkowski. 2021. Motivational differences between 5k runners, marathoners and ultramarathoners in Poland. *Sustainability* 13: 6980. [CrossRef]
- Rozmiarek, Mateusz, Patxi León-Guereño, Miguel Ángel Tapia-Serrano, Mablilyn Thuany, Thayse Natacha Gomes, Katarzyna Płoszaj, Wiesław Firek, and Ewa Malchrowicz-Moško. 2022. Motivation and Eco-Attitudes among Night Runners during the COVID-19 Pandemic. *Sustainability* 14: 1512. [CrossRef]
- Ruiz-Juan, F., and A. Zarauz-Sancho. 2011. Validation of the Spanish version of the Motivations of Marathoners Scales (MOMS). *Revista Latinoamericana de Psicología* 43: 139–56.
- Ruiz-Juan, F., and A. Zarauz-Sancho. 2014. Analysis of motivation amongst Spanish marathon runners. *Revista Latinoamericana de Psicología* 46: 1–11. [CrossRef]

- Schoenstedt, Linda J., and Jackie Reau. 2010. Running a social-media newsroom: A case study of the Cincinnati Flying Pig marathon. *International Journal of Sport Communication* 3: 377–86. [CrossRef]
- Shapiro, S. S., and M. B. Wilk. 1965. An analysis of variance test for normality. *Biometrika* 52: 591–611. [CrossRef]
- Sheldon, Pavica, and Katherine Bryant. 2016. Instagram: Motives for its use and relationship to narcissism and contextual age. *Computers in Human Behavior* 58: 89–97. [CrossRef]
- Simplício-Barreto, Bárbara, Isabela Vieira Silva Moura, Guilherme de Sousa Pinheiro, André Gustavo Pereira de Andrade, Franco Noce, and Varley Teoldo da Costa. 2021. Analysis of the Motivational Levels of Men and Women Amateur Runners. *Lecturas: Educación Física y Deportes* 26: 59–75. [CrossRef]
- Smirnov, N. 1948. Table for estimating the goodness of fit of empirical distributions. *The Annals of Mathematical Statistics* 19: 279–81. [CrossRef]
- Stenseng, Frode, Ingvild Bredvei Steinsholt, Beate Wold Hygen, and Pål Kraft. 2023. Running to get “lost”? Two types of escapism in recreational running and their relations to exercise dependence and subjective well-being. *Frontiers in Psychology* 13: 1035196. [CrossRef]
- Stragier, Jeroen, Mariek Vanden Abeele, and Lieven De Marez. 2018. Recreational athletes’ running motivations as predictors of their use of online fitness community features. *Behaviour and Information Technology* 37: 815–27. [CrossRef]
- Tabachnick, Barbara, and Linda Fidell. 2001. *Using Multivariate Statistics*. New York: Harper & Row.
- Thuany, Mabliny, Ewa Malchrowicz-Moško, Zbigniew Waśkiewicz, and Thayse Natacha Gomes. 2021. Individual and economic characteristics as determinants of Brazilian runners’ motivation. *Sustainability* 13: 10178. [CrossRef]
- Tomino, Ana Chersulich, and Marko Perić. 2022. Sport-Tourism Running Events in the Post-COVID-19 World: Any Sign of Change? *Academica Turistica* 15: 135–47. [CrossRef]
- Van Hooren, Bas, Jos Goudsmit, Juan Restrepo, and Steven Vos. 2020. Real-time feedback by wearables in running: Current approaches, challenges and suggestions for improvements. *Journal of Sports Sciences* 38: 214–30. [CrossRef] [PubMed]
- Waśkiewicz, Zbigniew, Pantelis T. Nikolaidis, Aina Chalabaev, Thomas Rosemann, and Beat Knechtle. 2019. Motivation in ultra-marathon runners. *Psychology Research and Behavior Management* 12: 31–37. [CrossRef] [PubMed]
- Whitehead, Amy E., Kanayo Umeh, Camilla Brockett, Hans Westerbeek, Emma Powling, Katie Fitton Davies, and James Rudd. 2020. Motivational differences between 5K, half marathon and full marathon participants in the UK and India. *Managing Sport and Leisure* 27: 337–50. [CrossRef]
- Wilkinson, Leland, and Task Force on Statistical Inference, American Psychological Association, Science Directorate. 1999. Statistical methods in psychology journals: Guidelines and explanations. *American Psychologist* 54: 594–604. [CrossRef]
- Woratschek, Herbert. 2002. Dienstleistungsqualität und Sport im Tourismus—Empirische Befunde zur Gästezufriedenheit in Garmisch-Partenkirchen. In *Tourismus und Sport Wirtschaftliche, soziologische und gesundheitliche Aspekte des Sport-Tourismus*, 1st ed. Edited by A. Dreyer. pp. 27–54. Available online: https://link.springer.com/chapter/10.1007/978-3-663-09049-6_2 (accessed on 17 February 2024). [CrossRef]
- You, Di, Yukiko Maeda, and Muriel J. Bebeau. 2011. Gender differences in moral sensitivity: A meta-analysis. *Ethics & Behavior* 21: 263–82.
- Zach, Sima, Yan Xia, Aviva Zeev, Michal Arnon, Noa Choresh, and Gershon Tenenbaum. 2017. Motivation dimensions for running a marathon: A new model emerging from the Motivation of Marathon Scale (MOMS). *Journal of Sport and Health Science* 6: 302–10. [CrossRef]
- Zarauz-Sancho, Antonio, and Francisco Ruiz-Juan. 2012. Super-adherence marthoners: Predictor variables and gender differences. *Universitas Psychologica* 11: 895–907. [CrossRef]

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