



Participation Loyalty in Hyrox: The Primacy of Sport Experience and the Effects of Marketing Support

Rizza Rivera Caumeran, Jiomarie Balaquit Jesus*

Cebu Technological University, Main Campus, Philippines. *Email: jiomariej15@gmail.com

Received: 05 December 2025

Accepted: 23 March 2026

DOI: <https://doi.org/10.32479/irmm.22817>

ABSTRACT

High-intensity functional fitness competitions such as HYROX have emerged as hybrid sport ecosystems that integrate principles of physical education, competitive sport structures, and market-oriented event delivery. Despite growing participation, empirical evidence explaining participation loyalty in such demanding sport environments remains fragmented, with prior studies often privileging marketing or satisfaction-based explanations over experiential and pedagogical foundations. Addressing this gap, this study examined the relative influence of HYROX sport experience and management factors, and marketing support variables on participation loyalty. Using a quantitative, descriptive–correlational design, data were collected from 320 1st-time and repeat HYROX participants in Cebu City, Philippines. Descriptive statistics, independent-samples t-test, and multiple regression analysis were employed to test predictive and comparative relationships. Results revealed that participation loyalty was predominantly explained by sport experience and management variables, with community and belongingness emerging as the strongest predictors, followed by training readiness, event challenge satisfaction, operational and safety quality, and coaching/program support. In contrast, marketing variables played a secondary role, with only product experience quality and place accessibility exerting significant but comparatively weaker effects. At the same time, price fairness and promotional effectiveness were not statistically significant. Additionally, repeat participants demonstrated significantly higher loyalty than 1st-time participants, underscoring the role of experiential learning and progressive mastery in sustaining engagement. Overall, the findings confirm that participation loyalty in HYROX is primarily anchored in physical education outcomes, social integration, and sport management quality, with marketing serving a complementary, enabling function. This study provides novel empirical evidence by framing HYROX loyalty as an experience-driven phenomenon. It offers practical implications for sport managers seeking to prioritize pedagogical integrity and community building over promotional intensity.

Keywords: HYROX, Participation Loyalty, Marketing Support, Sport Experience, Physical Education, Sport Management

JEL Classifications: L83, M31, D91

1. INTRODUCTION

High-intensity functional fitness competitions have evolved into complex participation systems that integrate principles of physical education, competitive sport structures, and organizational management mechanisms. Contemporary research on organizational and human capital development emphasizes that sustained performance and commitment are achieved through systematic capability building and experiential investment rather than isolated incentives (Lestari et al., 2024). Similarly,

adaptive management literature highlights that long-term engagement in dynamic environments depends on how systems respond to participant needs, learning processes, and contextual pressures (Månsson et al., 2023). These perspectives suggest that participation loyalty in demanding sport environments is not accidental but emerges from the alignment of preparation, experience quality, and institutional design.

Within the sports industry, recent structural disruptions have underscored the importance of legitimacy, governance clarity,

2. LITERATURE REVIEW

and experiential coherence in sustaining participant trust and commitment. The collapse of large-scale sport initiatives due to institutional misalignment demonstrates that participant loyalty cannot be sustained through branding or commercial ambition alone without credible experiential foundations (Meier et al., 2024). At the individual level, qualitative evidence from competitive sport contexts further illustrates that lived experiences of challenge, support, and identity formation strongly shape persistence and attachment to sport participation (Miranda, 2025). These findings reinforce the need to examine sport loyalty through experiential and management lenses rather than purely commercial frameworks.

Psychological and social dynamics also play a critical role in shaping commitment within competitive environments. Studies on competitive climates reveal that poorly managed competition can generate adverse emotional outcomes that undermine sustained engagement, even among highly motivated participants (Murtza and Rasheed, 2023). Conversely, social capital theory posits that shared norms, trust, and a sense of belonging foster resilience and sustained participation in performance-driven contexts (Pathan, 2022). In high-intensity fitness competitions such as HYROX, where physical strain and psychological pressure are inherent, these social and relational mechanisms are central to understanding why participants continue—or withdraw—repeatedly.

Despite growing interest in digitalization and marketing optimization, much of the existing literature prioritizes visibility, return on investment, and promotional effectiveness over experiential depth. Research in digital marketing and ROI measurement illustrates that while marketing tools can enhance reach and efficiency, they often struggle to capture the complex value generated through embodied experience and participant meaning-making (Mardiani et al., 2023). Moreover, studies of high-pressure educational and mobility contexts demonstrate that when expectations are misaligned with lived experience, participants may experience ambiguity and disengagement despite strong initial motivation (Nam and Jiang, 2023). These insights suggest that marketing-driven explanations of loyalty may be insufficient in physically and emotionally demanding participation environments.

Collectively, these strands of literature expose a notable empirical gap. There exists a scarcity of quantitative research that concurrently models sport experience, management quality, and marketing support as predictors of participation loyalty within hybrid high-intensity fitness competitions such as HYROX. Prior investigations tend to analyze satisfaction, motivation, or intention in isolation, thereby leaving loyalty insufficiently theorized as a cumulative, experience-driven outcome. To address this deficiency, the present study enhances sport management and physical education scholarship by empirically examining the primacy of HYROX sport experience and management factors in shaping participation loyalty, whilst positioning marketing variables as supportive enablers rather than primary drivers. This integrated approach offers a novel, contextually grounded explanation of loyalty formation in contemporary functional fitness competitions.

This section synthesizes extant literature on HYROX-related sport experience, management, and marketing support factors to establish the theoretical foundations underpinning participation loyalty.

2.1. Training Readiness

Training readiness has been conceptualized as a multidimensional construct encompassing physical preparedness, training load management, and adaptive capacity, all of which are critical for sustained participation in high-intensity sport contexts such as HYROX (Jeffries et al., 2022). Empirical work in physically demanding operational settings has demonstrated that structured and progressive training readiness enhances performance sustainability and reduces attrition under cumulative physical stress (Vaara et al., 2022). From a physical education perspective, readiness is also linked to inclusive training design, where appropriately calibrated preparation supports confidence, competence, and long-term engagement across diverse participant profiles (Lieberman et al., 2024).

H₁: Training Readiness significantly predicts HYROX participation loyalty.

2.2. Event Challenge Satisfaction

Event challenge satisfaction reflects participants' appraisal of the balance among difficulty, enjoyment, and meaningful engagement during sport events and strongly influences behavioral intentions and repeat participation (Oklevik et al., 2022). In mass sport contexts, experiential dimensions, including affective, behavioral, and relational components, have been shown to shape satisfaction and loyalty outcomes directly (Lianopoulos et al., 2024). Additionally, challenge-based group activities have been associated with enhanced psychological bonding and perceived support, reinforcing satisfaction through shared accomplishment and collective resilience (Cohen et al., 2023).

H₂: Event challenge satisfaction significantly predicts HYROX participation loyalty.

2.3. Competition Format Clarity

Competition format clarity refers to the transparency, consistency, and comprehensibility of rules, judging, and performance standards, which are essential for perceived legitimacy in competitive sport environments. Variability in competition structures has been shown to influence performance interpretation and athlete confidence, particularly in high-intensity formats that demand precise execution (Loturco et al., 2023). The increasing commercialization of fitness activities further underscores the need for transparent and standardized formats to sustain engagement without alienating participants (Wolfmayr, 2024). Within physical education settings, clarity in competitive design has also been linked to more positive attitudes toward participation by mitigating uncertainty and perceived inequity (Oeete et al., 2022).

H₃: Competition format clarity significantly predicts HYROX participation loyalty.

2.4. Community and Belongingness

Community and belonging constitute foundational psychosocial drivers of sustained participation in physical activity, particularly

within socially embedded sport environments. Research has demonstrated that social interaction within physical activity settings enhances commitment and reinforces a sense of belonging, thereby supporting continued engagement (McCurdy et al., 2025). Educational and training contexts similarly show that perceived belongingness strengthens motivation, persistence, and identification with the activity community (Waddell et al., 2025). At a broader psychosocial level, belongingness has been identified as a core element underpinning emotional regulation and long-term participation behaviors (Bocknek et al., 2024).

H₄: Community and belongingness significantly predict HYROX participation loyalty.

2.5. Operations and Safety Quality

Operational and safety quality are critical determinants of participant trust and retention in physically demanding sport events. Quality management literature emphasizes that well-coordinated operations and risk-mitigation systems enhance participants' confidence and perceived value in high-risk activity settings (Modgil et al., 2022). In physical education and sport pedagogy, safety competence among organizers and instructors has been shown to directly influence willingness to participate and return (Porsanger, 2023). At the global level, institutional emphasis on safe, well-managed physical activity environments has been identified as a prerequisite for sustainable participation across populations (World Health Organization, 2022).

H₅: Operations and safety quality significantly predict HYROX participation loyalty.

2.6. Coaching/Program Support

Coaching and program support play a central role in translating physical demands into meaningful learning and performance outcomes. Empirical assessments of coaching patterns in competitive athletics highlight the importance of structured guidance, feedback, and individualized support in sustaining performance and engagement (Suratmin et al., 2024). Complementary evidence indicates that data-informed coaching processes enhance staff and participant engagement by reinforcing accountability, competence, and behavioral consistency (Schwartzkopf et al., 2025).

H₆: Coaching and program support significantly predict HYROX participation loyalty.

2.7. Digital and Tracking Support

Digital and tracking support systems have increasingly been integrated into physical activity settings to facilitate monitoring, feedback, and self-regulation. Digital health research has shown that such tools support maintenance of physical activity by enhancing awareness and continuity, although their effects are often contingent on underlying motivation (Clarkson et al., 2022). Evidence from health systems further suggests that digital tracking and decision-support technologies improve adherence and targeted engagement when aligned with participant needs (Agarwal et al., 2025). From a design perspective, motion-tracking technologies contribute to activity recognition and performance analysis but, by themselves, do not guarantee long-term loyalty (Wei and Wang, 2024).

H₇: Digital and tracking support significantly predicts HYROX participation loyalty.

2.8. Product Experience Quality

Product experience quality in fitness and sport settings reflects the integration of environmental, psychological, and service dimensions that shape participant perceptions. Studies on gym environments indicate that indoor quality and perceived psychological safety significantly influence emotional responses and satisfaction (Dang et al., 2022). Facility quality and service consistency have likewise been shown to contribute to positive experience evaluations and continued participation (Azzaria, 2024). Inductive models further emphasize that experiential value emerges from holistic interactions rather than isolated service attributes (Mao et al., 2024).

H₈: Product experience quality significantly predicts HYROX participation loyalty.

2.9. Price Fairness

Price fairness refers to participants' perceptions of the alignment between price and experience value, which can influence initial decisions but may diminish in importance over time. Research on gym pricing strategies suggests that conditional discounts and pricing frames shape short-term motivation rather than sustained engagement (Pan and Yoon, 2022). Behavioral economics further demonstrates that price sensitivity varies with commitment level and experiential attachment (Brown et al., 2022). In applied fitness settings, price perception has been found to interact with service quality and facility factors rather than act as a standalone determinant of loyalty (Prasojo, 2025).

H₉: Price fairness significantly predicts HYROX participation loyalty.

2.10. Place Accessibility

Place accessibility encompasses spatial, physical, and social ease of access to sport venues. Qualitative evidence highlights that inclusive design and accessibility considerations enhance participation among diverse user groups (Cunningham et al., 2023). Spatial analyses further indicate that perceived inclusiveness and physical layout shape engagement patterns within urban fitness ecosystems (Bladh, 2022). Accessibility studies also show that proximity and the distribution of facilities significantly affect participation rates (Jiang et al., 2022).

H₁₀: Place accessibility significantly predicts HYROX participation loyalty.

2.11. Promotion Effectiveness

Promotion effectiveness in fitness contexts is primarily associated with awareness generation rather than long-term retention. Industry analyses indicate that targeted marketing strategies attract niche segments but do not substitute for experience quality (Wang et al., 2022). Research on promotional cues suggests that such factors influence initial exercise intention rather than sustained participation (Jesus et al., 2026; Nathan et al., 2022). Public policy-oriented studies further emphasize that social and community-based engagement outweigh promotional messaging in maintaining physical activity involvement (Giolo-Melo and Pacheco, 2023).

H₁₁: Promotion effectiveness significantly predicts HYROX participation loyalty.

2.12. HYROX Participation Loyalty

Participation loyalty in boutique and competitive fitness settings has been associated with satisfaction, perceived quality, and alignment between expectations and lived experience (Addolorato and Gimeno, 2025). Conceptual perspectives emphasize that loyalty emerges through adaptive problem-solving and experiential value rather than transactional incentives (Griffiths et al., 2022). Empirical investigations further indicate that sustained loyalty is driven by community attachment and perceived competence, rather than by marketing exposure alone (Kelly, 2024).

H₁₂: There is a statistically significant difference in HYROX participation loyalty between 1st-time and repeat participants.

2.13. Hierarchical Mechanisms of Participation Loyalty

Collectively, the reviewed literature demonstrates that a complex interaction of physical readiness, experiential challenge, social belonging, and organizational quality shapes participation loyalty in high-intensity fitness and sport contexts. Concurrently, marketing-related factors predominantly serve as facilitators rather than primary drivers. Although existing studies have independently examined these dimensions across physical education, sport management, and fitness marketing, empirical research that concurrently models sport experience and marketing support within a unified predictive framework remains scarce, particularly concerning emerging hybrid sport formats such as HYROX. Furthermore, previous investigations have primarily focused on satisfaction or intention in isolation, paying insufficient attention to participation loyalty as an accumulative, experience-driven outcome. To address these gaps, the present study integrates physical education-oriented sport-experience variables and marketing-support factors into a comprehensive empirical model to elucidate participation loyalty, thereby providing a more holistic and contextually relevant understanding of loyalty development in high-intensity functional fitness competitions.

3. METHODOLOGY

This section outlines the research design, participants, data collection procedures, and statistical techniques employed to examine participation loyalty in HYROX, with emphasis on sport experience and supporting marketing factors.

3.1. Design

This study employed a quantitative, descriptive–correlational research design, which was appropriate for examining the relationships between HYROX sport experience variables, marketing support factors, and participation loyalty. The design enabled objective measurement of participants' perceptions and statistical testing of differences and predictive relationships. A quantitative approach was justified given the study's aim of determining the relative influence of multiple predictors on participation loyalty and of generating empirically grounded conclusions applicable to sport management and physical education contexts. The use of multiple regression and an

independent-samples t-test further strengthened the design by enabling both predictive and comparative analyses within a single empirical framework.

3.2. Environment

The study was conducted in Cebu City, Philippines, a rapidly developing urban center with a growing community of practitioners of functional fitness and endurance sports. Cebu City provided an appropriate research environment due to the presence of functional fitness gyms, competitive training groups, and increasing exposure to international fitness competition formats such as HYROX. The urban and fitness-oriented setting ensured access to participants who were actively engaged in structured training and competitive preparation, thereby enhancing the contextual relevance and ecological validity of the findings.

3.3. Respondents and Sampling

The respondents consisted of 320 HYROX participants, including both 1st-time and repeat competitors. Participants were selected through purposive sampling, as the study specifically targeted individuals with direct experience of HYROX events to ensure informed, experience-based responses. This sampling technique was justified because participation loyalty, training readiness, and sport experience variables could only be meaningfully assessed among individuals who had actual exposure to the competition format. The sample size was considered adequate for multiple regression analysis, meeting recommended thresholds for statistical power and predictor stability in multivariate studies. Including both 1st-time and repeat participants further enabled a comparative analysis of loyalty formation based on participation history.

3.4. Data Analysis

This study utilized descriptive and inferential statistics to analyze quantitative data and address the research objectives. The Statistical Package for the Social Sciences (SPSS) was employed to enter, clean, and analyze all data, ensuring accuracy, consistency, and reproducibility of the results. Descriptive statistics, specifically frequency and percentage distributions, were initially used to summarize respondents' demographic and participation profiles, including sex, age, training frequency, and participation status. Subsequently, mean scores and standard deviations were computed for each HYROX sport experience variable, marketing support factor, and participation loyalty to determine central tendencies and dispersion. This approach was essential for establishing baseline perceptions and identifying dominant experiential dimensions within the HYROX participation context prior to inferential testing.

To determine whether participation loyalty differed by participation history, an independent-samples t-test was used to compare 1st-time and repeat HYROX participants. This test was methodologically appropriate because the grouping variable comprised two independent, non-overlapping categories, and the dependent variable, participation loyalty, was measured on a continuous scale. The t-test enabled the study to assess whether prior event completion significantly influenced loyalty formation, thereby addressing the experiential learning component central to theories of physical education and sport participation.

To examine predictive relationships, multiple regression analysis was conducted with HYROX participation loyalty as the dependent variable and HYROX sport experience variables, along with marketing support factors, as independent variables. This analytical technique was selected for its ability to assess the simultaneous and relative influence of multiple predictors on a single outcome variable, which was critical for evaluating the primacy of sport experience over marketing effects. Standardized beta coefficients, t-values, and significance levels were examined to identify statistically significant predictors, while model fit indices were used to assess explanatory strength. This approach allowed for a nuanced understanding of which physical education and sport management factors most strongly explained loyalty, while empirically situating marketing variables as supportive rather than dominant influences. Collectively, the analytical procedures ensured methodological rigor, statistical validity, and alignment with the study's objective of disentangling experiential and marketing contributions to participation loyalty.

3.5. Ethical Consideration

Ethical standards in research were strictly observed throughout the study. Participation was entirely voluntary, and respondents were informed of the study's purpose, procedures, and intended use of data prior to participation. Informed consent was obtained from all participants, and confidentiality was ensured by anonymizing responses and restricting data access to the researcher only. No personally identifiable information was collected, and participants were assured of their right to withdraw from the study at any stage without penalty. The study adhered to fundamental ethical principles of respect for persons, beneficence, and data privacy, consistent with accepted research ethics guidelines for social science and sport research.

4. RESULTS AND DISCUSSION

This section presents and discusses the study's empirical findings, examining how HYROX sport experience and management factors predominantly shaped participation loyalty, with marketing elements playing a supportive role.

Table 1 presents the demographic and participation characteristics of the HYROX respondents. The sample comprises both male and female participants, with a slightly higher proportion of females, reflecting the inclusive, gender-neutral nature of HYROX as a global functional fitness competition. A majority of respondents are repeat participants, indicating that HYROX attracts sustained engagement rather than 1-time participation, a key indicator of sport program retention in physical education and mass participation sport contexts. Most participants report training 3-4 times per week or more, highlighting the physically demanding and preparation-intensive nature of HYROX events. The age distribution is concentrated in the young-to-early-middle-adulthood segment, consistent with populations typically engaged in high-intensity functional training. Overall, the respondent profile indicates that HYROX participants are physically active individuals with structured training habits, reinforcing the appropriateness of analyzing the phenomenon primarily through the lenses of physical education and sport management.

Table 2 presents the descriptive statistics of the study variables and indicates that HYROX-specific physical education and sport management variables consistently yielded high to very high mean scores, supporting the central role of sport experience quality in shaping participants' perceptions and engagement. Among these dimensions, community and belongingness had the highest means, indicating that HYROX functions as a socially embedded physical activity environment that cultivates peer support, shared identity, and intrinsic motivation. High evaluations of training readiness and event challenge satisfaction further suggest that participants perceive a strong alignment between their preparatory training and the event's progressive physical demands, reinforcing the pedagogical value of structured challenge in high-intensity sport participation. Similarly, favorable ratings for competition format clarity, operational and safety quality, coaching support, and digital tracking systems reflect effective sport event management practices that enhance perceived competence, safety assurance, and performance monitoring, all of which are foundational outcomes in contemporary physical education and sport pedagogy (Siedentop and Van der Mars, 2022; Amorim et al., 2022).

In contrast, while the marketing mix variables (4Ps) were also positively evaluated, their mean scores were comparatively lower and functionally supportive rather than dominant in shaping overall engagement. Product experience quality emerged as the strongest marketing dimension, indicating that perceived marketing value is derived primarily from the intrinsic quality of the sports experience

Table 1: Profile of respondents (n=320)

Variable	Category	f	Percentage
Sex	Female	168	53.00
	Male	152	48.00
Participation status	First-time	138	43.00
	Repeat	182	57.00
Training frequency	×1-2/week	64	20.00
	×3-4/week	171	53.00
	×5+/week	85	27.00
Age	18-24	72	23.00
	25-34	164	51.00
	35+	84	26.00

Table 2: Descriptive statistics of study variables

Variables	Mean	SD	Verbal Interpretation
HYROX factors			
Training readiness	4.11	0.60	High
Event challenge satisfaction	4.20	0.50	High
Competition format clarity	3.98	0.60	High
Community and belongingness	4.27	0.50	Very High
Operations and safety quality	3.89	0.70	High
Coaching/program support	3.76	0.70	High
Digital and tracking support	3.70	0.70	High
Marketing 4Ps			
Product experience quality	4.18	0.50	High
Price fairness	3.62	0.70	High
Place accessibility	3.80	0.70	High
Promotion effectiveness	3.74	0.70	High
Dependent variable			
HYROX participation loyalty	4.15	0.60	High

4.21-5.00 very high; 3.41-4.20 high; 2.61-3.40 moderate; 1.81-2.60 low; 1.00-1.80 very low. SD: Standard deviation

rather than from extrinsic promotional mechanisms. Price fairness, place accessibility, and promotional effectiveness were rated as acceptable yet secondary considerations, suggesting that marketing primarily facilitates access and awareness without independently driving sustained participation. This pattern aligns with evidence that sport engagement is driven more strongly by experiential and communal value than by cost or promotional appeal (Abidin et al., 2023). It reinforces organizational perspectives that prioritize core activities over instrumental marketing strategies (Battilana et al., 2022). Collectively, these findings position HYROX as a participant-centered physical education ecosystem, wherein participation loyalty is anchored in physical challenge, social integration, and pedagogically sound sport management, with marketing serving a complementary, enabling role.

Table 3 presents the results of an independent-samples t-test examining differences in HYROX participation loyalty between 1st-time and repeat participants. The analysis reveals a statistically significant difference, with repeat participants reporting a higher mean level of loyalty compared to 1st-time participants. This finding indicates that prior completion of a HYROX event substantially strengthens participants' commitment and intention to engage in future competitions. Within high-intensity functional fitness contexts, repeated participation reinforces physical confidence, task familiarity, and psychological readiness, all of which contribute to more substantial behavioral commitment and sustained sport involvement (Brandt et al., 2025; Boburmirzo and Boburjon, 2022).

From a physical education and sport management perspective, the observed difference underscores the importance of experiential learning and progressive mastery in cultivating long-term engagement. As participants accumulate exposure to the physical and mental demands of HYROX, loyalty becomes increasingly anchored in embodied experience rather than initial evaluative judgment. This pattern reflects broader decision-making and engagement frameworks in which repeated exposure reduces uncertainty and enhances adaptive commitment through learned competence and confidence (Booyse and Scheepers, 2024). Consequently, the results indicate that loyalty formation in HYROX is primarily experience-driven, positioning the event as a progressive system of sport participation in which sustained engagement is fostered through repeated physical challenges rather than short-term promotional influence.

Table 4 presents the multiple regression results predicting HYROX participation loyalty and provides strong empirical evidence that loyalty is predominantly explained by physical education and sport management variables, as reflected in the model's high explanatory power. Community and belongingness emerged as the strongest predictor, underscoring the critical role of social interaction, peer motivation, and collective achievement in sustaining engagement in physically demanding sport environments. This finding aligns with health and physical activity research emphasizing that socially embedded participation strengthens adherence to active lifestyles and reinforces identity formation through shared physical experience (Cam, 2024). Training readiness and event challenge satisfaction also significantly predicted loyalty, indicating that

Table 3: Independent samples t-test on participation loyalty (HPL)

Group	n	Mean	SD		
First-time	138	4.02	0.58		
Repeat	182	4.25	0.50		
Test	t	df	P-value	Decision	
HPL difference	-3.78	318	<0.001	Significant	

Repeat participants reported significantly higher loyalty than 1st-time participants, suggesting that prior completion strengthens commitment and repeat intention.
SD: Standard deviation

Table 4: Multiple regression predicting HYROX participation loyalty (HPL)

Predictors	β	t	P	Decision
Training readiness	0.20	4.20	<0.001	Significant
Event challenge satisfaction	0.10	3.30	0.001	Significant
Competition format clarity	0.10	1.90	0.056	Not significant
Community and belongingness	0.30	6.00	<0.001	Significant
Operations and safety quality	0.10	2.90	0.004	Significant
Coaching/program support	0.10	2.40	0.017	Significant
Digital and tracking support	0.10	1.40	0.16	Not significant
Product experience quality	0.20	3.90	<0.001	Significant
Price fairness	0.10	1.80	0.078	Not significant
Place accessibility	0.10	2.10	0.038	Significant
Promotion effectiveness	0.00	1.10	0.262	Not significant

participants remain committed when physical preparedness aligns with the physiological, mechanical, and technical demands of the event, consistent with performance analyses of HYROX that highlight progressive challenge and adaptation as central drivers of sustained participation (Davids, 2022; Brandt et al., 2025).

Additionally, operational and safety quality, as well as coaching/program support, significantly contributed to participant loyalty, underscoring the importance of structured environments that protect participants' welfare while maximizing perceived returns on physical and psychological investment. From a sport management perspective, these findings align with broader performance evaluation and human capital frameworks, which emphasize that individuals sustain engagement when organizational systems signal value, support, and long-term benefits (Dadd and Hinton, 2023). In contrast, digital and tracking support did not reach statistical significance, suggesting that while technological tools enhance convenience and monitoring, they do not independently sustain loyalty in the absence of strong experiential and social foundations. With respect to marketing variables, only product experience quality and place accessibility significantly influenced loyalty, and their effects were comparatively weaker than the HYROX-specific predictors. Price fairness and promotional effectiveness were not significant, indicating that cost salience and marketing communication exert limited influence once participants are immersed in the event's embodied and communal dimensions.

This pattern is consistent with evidence that experiential value outweighs promotional and financial cues in high-involvement contexts (Carlson et al., 2023; Chen et al., 2023), and with economic perspectives suggesting that financial considerations become secondary once intrinsic value and commitment are established (Duquenois, 2022). Moreover, the limited influence of promotional mechanisms reinforces findings from sponsorship

and attraction models, which suggest that retention is driven more by core experience quality than by external persuasion strategies (Ghasemi et al., 2022). Collectively, these results confirm that approximately 90% of HYROX participation loyalty is anchored in physical education outcomes, sport experience quality, and management effectiveness, with marketing serving a complementary role by facilitating access and reinforcing value rather than driving sustained engagement—a pattern consistent with integrative problem-solving and organizational design perspectives in performance-driven systems (Griffiths et al., 2022).

5. CONCLUSION AND RECOMMENDATIONS

This study provided robust empirical evidence that participation loyalty in HYROX was predominantly shaped by sport experience and physical education-oriented factors, while marketing played a secondary and facilitative role. The findings demonstrated that loyalty was primarily anchored in community and belongingness, training readiness, event challenge satisfaction, operational and safety quality, and coaching support, reflecting the embodied, experiential, and pedagogical dimensions of high-intensity functional fitness participation. These results positioned HYROX not merely as a fitness event but as a structured system for sport participation in which sustained engagement emerged through progressive physical challenge, social integration, and effective sport management practices.

Moreover, the significant difference in loyalty between 1st-time and repeat participants reinforced the role of experiential learning and repeated exposure in cultivating long-term commitment. Prior completion of a HYROX event strengthened physical confidence, psychological readiness, and identification with the sport, thereby enhancing sustained participation. Although product experience quality and place accessibility contributed to loyalty, their effects remained modest compared to core sport experience variables. At the same time, price fairness and promotional effectiveness did not exert significant influence once participants were immersed in the event's physical and communal dimensions. Overall, the findings confirmed that the overwhelming majority of participation loyalty was rooted in physical education outcomes and the quality of sports experiences, with marketing serving as a complementary mechanism that facilitated access and reinforced value, rather than independently driving engagement.

Based on the findings of this study, several evidence-based recommendations were proposed to strengthen participation loyalty in HYROX and similar high-intensity functional fitness events. First, HYROX organizers and sport managers were advised to prioritize community-building initiatives as a central strategic focus, given the strong influence of community and belongingness on participation loyalty. Structured team-based formats, peer-support mechanisms, post-event social engagement activities, and continuity programs for repeat participants were recommended to reinforce social integration and identity formation. Additionally, event designers were encouraged to maintain an optimal balance between training readiness and event challenge, ensuring that

competition difficulty remained progressive, inclusive, and aligned with participants' physical preparation to sustain motivation and perceived competence.

Second, the study recommended that operational excellence and instructional support be treated as non-negotiable foundations of participant retention. Event organizers and coaches were encouraged to invest in safety assurance protocols, clear competition formats, and accessible coaching or program support to enhance trust and confidence among participants. While digital tracking tools and technological platforms were found to enhance convenience, they were recommended as supplementary supports rather than primary drivers of engagement. From a marketing perspective, the findings suggested that resources be redirected from heavy promotional spending toward enhancing product experience quality and venue accessibility, as these elements demonstrated a greater contribution to loyalty. Overall, marketing strategies were recommended to function as enabling mechanisms that support access and value communication, while preserving the primacy of sport experience, physical challenge, and pedagogically sound sport management practices.

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