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Perceived Effects of Technology-Based Goal Setting on Lifestyle Behavior Change in Athletes

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A B S T R A C T

This study aimed to explore athletes' perceptions of how technology-based goal-setting tools influence their lifestyle behavior change. A qualitative exploratory design was employed using semi-structured interviews with 27 athletes from various sports disciplines in Peru. Participants were selected through purposeful sampling based on their experience with technology-assisted goal-setting tools such as fitness apps, wearables, and performance dashboards. Data collection continued until theoretical saturation was reached. All interviews were transcribed, translated into English, and analyzed thematically using NVivo 12 software, following Braun and Clarke's six-phase framework. Rigor was ensured through independent coding, member checking, and peer debriefing. Analysis revealed four main themes: (1) Motivational Enhancement (e.g., increased accountability, gamification appeal, goal commitment), (2) Behavioral Regulation (e.g., habit formation, sleep pattern control, diet monitoring), (3) Psychological and Emotional Impact (e.g., reduced stress, confidence improvement, emotional engagement), and (4) Contextual and Environmental Influences (e.g., technological accessibility, coach endorsement, institutional support). Athletes reported that digital tools not only improved their commitment and consistency but also positively affected emotional regulation and lifestyle structure. However, some participants noted barriers such as limited digital literacy and overdependence on metrics. Technology-based goal-setting tools are perceived by athletes as effective instruments for promoting healthy lifestyle behaviors by enhancing motivation, structure, and emotional resilience. However, their effectiveness depends on individual readiness, environmental support, and mindful integration into training culture. These tools can be leveraged in athlete development programs but require culturally sensitive, user-centered implementation to avoid unintended psychological pressures.

Keywords: *Technology-based goal setting; lifestyle behavior; athletes; qualitative research; digital health; motivation; behavior change.*

1. Introduction

Lifestyle behaviors among athletes—comprising sleep hygiene, dietary practices, physical activity routines, substance avoidance, and stress regulation—are critical not only for performance outcomes but also for long-term health and psychological well-being. However, research has shown that athletes, especially during transition phases or disruptions like the COVID-19 pandemic, often struggle to

maintain consistent and healthy behavioral routines (1, 2). Sedentary tendencies, irregular sleep cycles, and poor nutritional decisions have been reported even among professional athletes, highlighting the complex interplay between motivation, external support, and internal regulation (3, 4). Technological tools that promote goal setting—such as fitness tracking apps, smartwatches, and web-based performance dashboards—may thus serve as behavioral scaffolds that enhance athletes' ability to self-regulate and maintain adherence to healthy routines.

There is growing empirical evidence to support the efficacy of goal-setting mechanisms in sports contexts. The goal-setting theory posits that specific, measurable, and time-bound goals can enhance motivation, focus, and performance outcomes when accompanied by feedback and commitment mechanisms (5). Digital technologies operationalize these elements through features such as real-time feedback, milestone reminders, social comparisons, and gamified progress indicators (6, 7). In recent studies, athletes reported that goal-setting apps not only facilitated habit formation but also increased accountability and emotional engagement with the training process (8, 9). For example, mobile platforms that send regular reminders or visualize progress through dynamic dashboards help transform abstract objectives into concrete, actionable behaviors (10). Moreover, such tools have been associated with improved self-monitoring, a known mediator of sustained behavior change in sport and health settings.

Importantly, the adoption of these technologies appears to vary across athlete populations, depending on factors such as competitive level, age, access to resources, and cultural acceptance. In their cross-sectional study, Rodríguez-Salvatierra et al. (11) found that Peruvian youth athletes' lifestyle behaviors differed significantly based on the type of sport and access to structured goal-setting routines, highlighting the role of environmental and contextual moderators. Similar patterns have been observed in Southeast Asia and Latin America, where socioeconomic variables influence athletes' access to digital health interventions and training infrastructures (4, 8). Moreover, in post-pandemic contexts, athletes' perceptions of self-management and behavior regulation through technology have become more pronounced, as many training environments shifted from in-person supervision to remote, self-directed formats (12, 13). The psychological impact of this shift—particularly among athletes with limited prior exposure to digital tools—raises questions about how such technologies are received and interpreted.

Although several studies have examined digital interventions in the general population or among clinical groups, fewer have explored how athletes themselves interpret and describe the effect of technology-based goal setting on their behavior. This is a crucial gap, as perception mediates adoption and long-term engagement with technology. According to Judge et al. (14), athletes' belief in the relevance and usability of tools significantly influences their willingness to incorporate them into daily routines. Similarly, qualitative studies have emphasized the importance of subjective narratives in understanding behavior change in sport settings, especially where motivational, emotional, and social dynamics intersect (15, 16).

Research on behavioral outcomes has also highlighted the intersection between digital goal setting and lifestyle domains such as nutrition, stress, and sleep. For instance, Noronha et al. (17) found that athletes with better nutrition knowledge—often facilitated through app-based education—demonstrated improved dietary intake. Çelik and Haney (18) explored how healthy lifestyle behaviors among university athletes correlated with depression and internet addiction, revealing the double-edged role of technology as both a support and potential risk factor. These findings underscore the need for careful contextualization of digital interventions, particularly among young or tech-dependent users.

In parallel, the literature has also addressed behavioral vulnerabilities among athletes, including tendencies toward self-destructive or compulsive behaviors. (19) warn that while sports can serve as a protective factor, the pressures of achievement and digital surveillance may also exacerbate stress or unhealthy coping mechanisms. In contrast, (1) argue that the pandemic has revealed athletes' adaptability and the role of technology in mitigating the "invisible pandemic" of non-communicable diseases linked to sedentary habits. This complexity suggests that athlete-centered digital goal setting may act as either an enabler or a disrupter of lifestyle equilibrium, depending on its integration into broader support systems.

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Furthermore, sociocultural dimensions—including family norms, institutional endorsement, and peer influence—play a role in shaping athletes' attitudes toward technology. In the study by (20), Filipino athletes' financial behaviors were shown to interact with their sports lifestyles, revealing how external pressures influence daily decisions. Similarly, (21) found that collegiate athletes acting as influencers on social media had to negotiate dual identities—athletic and lifestyle-oriented—which in turn shaped their public engagement with health practices. Such insights point to the layered nature of behavioral identity in digital contexts.

From an educational standpoint, digital goal-setting tools may also function as training aids that reinforce self-discipline, academic hardiness, and time management—skills relevant to both sport and non-sport domains. (22) note that student athletes with stronger goal orientation and lifestyle discipline perform better academically, further supporting the crossover benefits of structured digital planning. This is echoed in (23), whose randomized controlled trial found that lifestyle interventions improved health outcomes among formerly elite but currently inactive athletes. The long-term utility of these tools, therefore, may extend beyond current performance enhancement into post-career health preservation.

Finally, the gendered dimension of lifestyle behavior change through technology should not be overlooked. In their study on Japanese female athletes, (3) reported significant disruptions in menstrual and sleep cycles during the pandemic, influenced in part by behavioral tracking and psychological stress. Such findings invite a deeper understanding of how athletes interpret digital feedback about their bodies, and whether this supports or complicates their health regulation practices.

Given the diverse, complex, and context-specific nature of athletes' lifestyle behavior change, this study employs a qualitative approach to examine how athletes in Peru perceive the effects of technology-based goal setting on their lifestyle choices.

2. Methods and Materials

2.1. Study Design and Participants

This study adopted a qualitative exploratory design to gain an in-depth understanding of the perceived effects of technology-based goal setting on lifestyle behavior change among athletes. The qualitative approach was chosen to explore subjective experiences, personal narratives, and contextual factors that shape behavioral changes, aligning with the research objective of uncovering rich, nuanced insights.

The participants included 27 athletes from various sports disciplines residing in Peru. Purposeful sampling was employed to recruit individuals who had prior or ongoing experience with technology-assisted goal-setting tools, such as mobile applications, wearable fitness trackers, or performance monitoring platforms. The inclusion criteria required participants to be over the age of 18 and actively engaged in sports training or competition within the last 12 months. Maximum variation sampling was further used to ensure diversity in gender, age, sport type, and competitive level. The number of participants was determined based on the principle of theoretical saturation, which was achieved when no new themes or categories emerged during the later stages of data analysis.

2.2. Data Collection

Data were collected through semi-structured, in-depth interviews, allowing for a flexible yet focused exploration of participants' lived experiences and perceptions. An interview guide was developed based on a review of existing literature and included open-ended questions related to athletes' experiences with goal-setting technologies, perceived lifestyle changes, motivational dynamics, and contextual facilitators or barriers.

Interviews were conducted in Spanish, either face-to-face or via secure online video conferencing platforms, depending on participant availability and location. Each interview lasted between 45 to 75 minutes and was audio-recorded with the consent of the participant. All recordings were transcribed verbatim and translated into English for analysis, ensuring semantic equivalence during translation to preserve meaning. Ethical approval for the study was obtained from the Institutional Review Board of the

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affiliated university, and informed consent was obtained from all participants prior to data collection.

2.3. Data Analysis

Thematic analysis was employed to systematically identify, analyze, and interpret patterns of meaning within the data. The process followed Braun and Clarke's six-phase framework: familiarization with data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. NVivo 12 qualitative data analysis software was used to assist in organizing, coding, and retrieving data efficiently.

An inductive approach guided the analysis, allowing themes to emerge naturally from the data rather than being pre-imposed. Two researchers independently coded the transcripts to enhance credibility and reduce potential bias. Discrepancies in coding were discussed and resolved through consensus, and peer debriefing was employed to ensure analytical rigor. Member checking was conducted with a subset of participants to validate the emergent themes and enhance trustworthiness.

3. Findings and Results

A total of 27 athletes (15 male and 12 female) participated in the study. Participants ranged in age from 19 to 34 years, with a mean age of 26.4 years (SD = 4.2). The sample included individuals from various sporting disciplines, including endurance sports such as long-distance running and cycling (n = 9), team sports such as football and volleyball (n = 10), and individual sports such as martial arts and swimming (n = 8). In terms of competitive level, 11 participants were national-level athletes, 10 competed at the regional level, and 6 identified as recreational or semi-professional. All participants had used a technology-based goal-setting application or platform for a minimum of six months prior to the interview. Regarding educational background, 18 participants had completed university-level education, while the remaining 9 had attained a high school diploma or technical certification. Most participants resided in urban areas of Peru (n = 21), while 6 were from semi-urban or rural settings.

Table 1

Categories, Subcategories, and Concepts (Open Codes)

Category (Theme)	Subcategory (Subtheme)	Concepts (Open Codes)
1. Motivational Enhancement	Increased Accountability	daily reminders, progress feedback, guilt reduction, app alerts, weekly reviews
	Intrinsic Motivation Activation	autonomy in goal setting, personal relevance, self-satisfaction, identity alignment
	Competitiveness Boost	leaderboard rankings, challenge features, peer comparison, virtual rewards, rankings pressure
	Self-Efficacy Strengthening	successful goal completion, visualized progress, performance logs, task mastery
	Gamification Appeal	achievement badges, points systems, progress bars, motivational design, milestone unlocking, fun elements
	Goal Commitment Reinforcement	real-time monitoring, regular goal checking, behavioral tracking, adaptive goal adjustment
	Time Orientation Improvement	deadline awareness, schedule syncing, forward planning, habit calendar
2. Behavioral Regulation	Habit Formation	daily task repetition, routine alerts, behavioral nudges, cue-based routines
	Diet Monitoring	calorie tracking, food diary photos, macro breakdowns, hydration tracking, diet scoring
	Sleep Pattern Control	sleep duration logging, sleep quality feedback, bedtime reminders, circadian feedback
	Injury Prevention Strategies	fatigue warnings, rest suggestions, strain prediction, physical load monitoring
	Exercise Consistency	streak tracking, missed session alerts, personalized workout plans
	Reduction in Procrastination	real-time prompts, micro-goals, progress fragmentation
3. Psychological and Emotional Impact	Stress Reduction	mental load offloading, task clarity, goal simplification, regulated expectations
	Sense of Control	structured planning, flexible scheduling, predictability of training, controlled workload
	Confidence Improvement	achieving micro-goals, success visualization, real-time improvement feedback, low failure risk
	Emotional Engagement	personalized goal content, positive reinforcement, visual motivation cues

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	Reduced Ambiguity	clear benchmarks, performance metrics, concrete goals
4. Contextual and Environmental Influences	Social Support Integration	coach feedback sync, team goal visibility, peer encouragement, shared progress
	Access to Resources	app usability, language options, offline access, cost efficiency, local content relevance
	Cultural Acceptance	compatibility with training norms, sport-specific traditions, coach approval
	Technological Familiarity	digital literacy level, prior app usage, learning curve
	External Constraints	internet availability, device limitations, time zone syncing, financial barriers
	Institutional Facilitation	club-level adoption, team mandates, sponsor incentives, training integration

Theme 1: Motivational Enhancement

Increased Accountability was a recurrent subtheme. Many athletes expressed that technology-based tools helped them remain more accountable to their training routines. Daily reminders and app alerts served as external cues that kept them focused. One participant stated, "When I see the notification pop up, it's like a coach reminding me — even if it's just an app." Others mentioned that weekly reviews motivated them to stay on track, as they didn't want to "see gaps" in their progress charts.

Intrinsic Motivation Activation emerged as athletes described how goal-setting tools allowed them to personalize their objectives. The ability to set self-defined goals increased their internal drive. A participant reflected, "These apps let me set goals that matter to me, not just what my coach wants — that's powerful." This sense of autonomy and relevance fostered a deeper connection to their efforts.

Competitiveness Boost was reported, especially among athletes involved in team sports or using features like leaderboards. The drive to outperform peers or maintain rank on tracking apps created healthy pressure. One athlete noted, "I'm not just competing with others; I'm competing with my past self. The leaderboard shows me that."

Self-Efficacy Strengthening was linked to consistent visual feedback. Several athletes emphasized that tracking their gradual improvements boosted their belief in their capabilities. As one explained, "Every time I complete a micro-goal, I feel more confident I can tackle the bigger ones."

Gamification Appeal was particularly motivating for younger athletes. The presence of badges, milestones, and animated progress bars turned goal achievement into an engaging experience. A participant commented, "I know it's silly, but I feel great when I unlock a new badge — it's like leveling up in a game."

Goal Commitment Reinforcement occurred through constant interaction with technology. Real-time monitoring and adaptive goal adjustments kept athletes aligned with their targets. One interviewee said, "I check my app even before breakfast. It's part of my routine now — if I don't, I feel lost."

Time Orientation Improvement also emerged, with athletes reporting that scheduled goal deadlines and synced calendars helped them prioritize tasks and plan proactively. "It's like having my week pre-planned by a smart assistant," shared a participant, emphasizing how digital structure reduced decision fatigue.

Theme 2: Behavioral Regulation

Habit Formation was reinforced by the repetitive use of goal-setting features. Athletes indicated that small, regular tasks supported behavior internalization. "The app nudges me every day. After a while, I don't need the reminder — it's just automatic now," said one athlete.

Diet Monitoring was made easier through features like food diaries and macro calculators. Athletes appreciated the precision and accessibility of nutritional data. A participant explained, "Logging my meals makes me think twice before eating junk. It's like my diet is watching me."

Sleep Pattern Control was another observed impact, especially for endurance athletes. Technology-based reminders and sleep-tracking features encouraged better rest routines. "Seeing how poor sleep affects my recovery score really changed how seriously I take my bedtime," noted one participant.

Injury Prevention Strategies were perceived as a benefit by athletes using wearables or apps that tracked exertion. By receiving feedback on overtraining risks or fatigue, participants became more cautious. "The app warned me that my recovery was low — I skipped the extra session, and I'm glad I did," said one user.

Exercise Consistency improved due to streak tracking and scheduled plans. Missed session notifications acted as subtle guilt cues. "If I miss a session, the app tells me

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immediately — it's like it knows I'm slacking," an athlete joked.

Reduction in Procrastination was supported by features that broke down large goals into manageable micro-goals. This helped athletes avoid delay and stay productive. "When I see a big goal, I freeze. But when it's split into daily steps, I just do it," shared a participant.

Theme 3: Psychological and Emotional Impact

Stress Reduction emerged from the structure that technology provided. Athletes reported feeling more relaxed when expectations and plans were clearly laid out. "I don't have to worry if I'm doing enough — it's all there in the app," one participant noted.

Sense of Control was enhanced through customization and predictability in goal-setting tools. Many felt less overwhelmed when they could see and adjust their weekly or monthly plans. "It helps me feel in charge — not like I'm being pushed by my coach all the time," said a national-level athlete.

Confidence Improvement was mentioned in relation to repeated small successes. Tracking incremental achievements built a sense of competence. One participant commented, "The app shows me how far I've come. Even when I doubt myself, the data doesn't lie."

Emotional Engagement arose from personalization and encouragement built into the digital tools. Visual feedback and motivational messages made users feel emotionally supported. "Sometimes, when it says 'You're doing great!' — it actually lifts my mood," said one female athlete.

Reduced Ambiguity was a key benefit cited across interviews. With clear benchmarks and performance metrics, athletes felt less confusion about what to aim for. "Before, I didn't know how to measure progress. Now I have numbers, trends, everything," explained one user.

Theme 4: Contextual and Environmental Influences

Social Support Integration was facilitated by sharing progress or team-based goals through platforms. Athletes valued receiving feedback and encouragement from teammates and coaches. "My coach sees my updates and texts me when I'm slacking — it keeps me on my toes," said a male participant.

Access to Resources influenced usage patterns. Athletes appreciated apps that were free, multilingual, and functional offline. "I travel for tournaments — so being able to use it without internet is a lifesaver," shared one athlete from a rural region.

Cultural Acceptance was a mixed theme. While many embraced tech tools, a few highlighted that traditional coaches viewed them with skepticism. "My old coach thinks it's just a fad — but it's working for me," noted one participant.

Technological Familiarity impacted adoption. Athletes with prior exposure to similar apps adapted more quickly. "If you've used even one fitness app before, it's easy. If not, it can be confusing," reported one user.

External Constraints such as poor connectivity, lack of devices, or cost were cited as barriers. "Sometimes my app doesn't sync because of bad Wi-Fi. That breaks the flow," mentioned a frustrated athlete.

Institutional Facilitation was a facilitator in some teams or clubs that officially adopted goal-setting apps. This legitimized the tools and increased usage. "Our team made it mandatory — that's when I really started taking it seriously," one national-level athlete explained.

4. Discussion and Conclusion

The present study aimed to explore how athletes perceive the effects of technology-based goal setting on lifestyle behavior change. The thematic analysis revealed four major themes: motivational enhancement, behavioral regulation, psychological and emotional impact, and contextual and environmental influences. Across these dimensions, participants described a range of benefits—such as increased accountability, improved self-efficacy, and better behavioral consistency—as well as several limitations and conditional factors. The findings suggest that technology-based goal setting can significantly influence athletes' lifestyle habits, particularly when integrated with personalized, accessible, and emotionally resonant digital tools.

Motivational Enhancement emerged as a dominant theme in athletes' experiences, with participants consistently reporting that digital goal-setting tools increased their accountability, engagement, and commitment. Features such as reminders, progress tracking, gamification, and visualized feedback created external prompts and internal motivations that encouraged sustained behavior. This is consistent with goal-setting theory, which emphasizes that feedback and specificity enhance performance and persistence (5). The

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presence of gamified elements—badges, rankings, milestones—particularly appealed to younger athletes, aligning with findings from (6), who emphasized the role of digital stimuli in maintaining motivation among adolescent taekwondo practitioners.

Additionally, the data support the notion that intrinsic motivation is strengthened when athletes have autonomy in defining and adjusting their goals. This aligns with the work of (10), who observed that post-pandemic athletes preferred customizable and context-sensitive planning tools when engaging with sports complexes. Moreover, the enhancement of time orientation through goal deadlines and synchronized calendars in apps reinforces the idea that digital structure can reduce decision fatigue and increase intentionality in daily routines, echoing the behavioral consistency observed by (2) among physically active adults.

The second theme, Behavioral Regulation, highlighted how technology facilitated better habit formation, dietary tracking, exercise adherence, sleep control, and injury prevention. Participants reported that structured reminders and self-monitoring features contributed to the gradual internalization of health-oriented routines. This finding mirrors the conclusions of (9), who found that structured goal setting correlated with improved health behaviors in athletes. Similarly, the diet-monitoring capabilities of these tools echoed the findings of (17), who identified a link between digital nutrition education and improved dietary habits among adolescent soccer players.

The role of goal-setting technology in reducing procrastination and increasing exercise consistency is particularly noteworthy in light of studies conducted during and after the COVID-19 pandemic. (4) and (1) both emphasized that disruptions to athletes' normal routines led to declines in training frequency and lifestyle discipline. In this study, athletes explained that real-time prompts and micro-goal segmentation helped them stay consistent, even in unsupervised or autonomous training contexts. Additionally, features such as recovery warnings and load monitoring contributed to injury prevention, suggesting that behavioral regulation extends beyond motivation and into physiological self-care—a finding supported by (3), who discussed the impact of digital tracking on menstrual and sleep regulation among Japanese female athletes.

The third major theme, Psychological and Emotional Impact, revealed how goal-setting technologies shaped athletes' sense of control, reduced stress, and improved confidence. Participants described how digital tools created emotional reinforcement through motivational messages, structured planning, and milestone completion. This reflects the psychological benefits of structure and clarity highlighted in (14), who found that perceived efficacy sources—such as clarity of purpose and feedback—influence leadership behavior in athletes with disabilities. The reduction in stress, especially related to planning and uncertainty, is consistent with the work of (13), who found that athletes undergoing transitions benefited from structured interventions to manage change.

The emotional effects of seeing tangible progress were particularly pronounced. Participants explained that when they could visualize their achievements, they felt validated and more confident in their athletic identity. This mirrors findings by (23), whose study on retired athletes showed that structured lifestyle interventions helped maintain psychological well-being even after competitive exit. Furthermore, the reduced ambiguity provided by goal-setting tools gave athletes greater clarity about expectations and performance metrics, reinforcing the value of digital feedback loops in enhancing emotional engagement and perceived control.

Contextual and Environmental Influences, the fourth theme, emphasized the role of social, institutional, and technological environments in shaping athletes' use of digital goal-setting tools. Participants cited the influence of coaches, peers, and organizational norms in adopting and maintaining these behaviors. This is consistent with (11), who emphasized the role of environmental structure and team dynamics in shaping lifestyle adherence among Peruvian youth athletes. Social reinforcement features—such as shared dashboards and team leaderboards—were mentioned as critical motivators, a finding that echoes (21), who highlighted how athletes' online identities and social media interactions intersect with their lifestyle behaviors.

Another key contextual factor was accessibility. Participants noted that apps offering offline functionality, language localization, or low-cost access were more effective and sustainable. This supports the equity-focused concerns raised by (8) and (24), who both warned that the

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benefits of sports and technology often remain inaccessible to those in under-resourced settings. Cultural acceptance of technology also played a role; while most athletes embraced the tools, a few reported coach skepticism, particularly in traditional or older coaching environments. This reflects a generational and cultural shift in sports culture, as noted by (7), who described the gradual transition from consumerist to professional lifestyle behaviors among elite athletes.

Technological familiarity was another important dimension. Athletes with higher levels of digital literacy reported faster adaptation and more effective use of goal-setting tools. These findings align with the broader research on digital health adoption, where perceived ease of use and prior exposure predict sustained engagement (25). In contrast, athletes who faced connectivity issues, device limitations, or institutional resistance were less likely to engage fully with the tools. This points to the need for infrastructure support and targeted onboarding strategies to bridge digital gaps.

Interestingly, several participants also described the long-term impact of these tools on their broader life habits, such as sleep timing, time management, and emotional regulation. This is echoed in the findings of (22), who emphasized the cross-domain impact of digital self-regulation on academic and athletic outcomes. Similarly, (16) highlighted how retired female athletes who engaged with physical activity planning tools experienced greater life satisfaction and body satisfaction—suggesting that the benefits of goal setting persist beyond peak performance years.

Finally, some findings pointed to potential risks or ambivalences. A minority of athletes noted that overly rigid digital planning sometimes led to pressure or guilt, especially when progress was not linear. These experiences resonate with concerns raised by (19), who cautioned that the same technologies that promote discipline may also trigger self-critical or obsessive tendencies if not used mindfully. Thus, while the majority of participants described positive behavioral and psychological effects, the findings also underscore the importance of balance, personalization, and psychological support in digital goal-setting frameworks.

This study, while offering rich qualitative insights, has several limitations. First, it focused exclusively on athletes residing in Peru, which may limit the generalizability of the findings to other cultural or institutional contexts. Second, all participants self-reported their experiences, which may introduce biases related to recall, social desirability, or self-perception. Third, although thematic saturation was reached with 27 participants, the diversity of sports types and competitive levels means that certain nuances may have been underexplored. Lastly, the study focused only on semi-structured interviews; triangulating these findings with observational or longitudinal data could provide a more comprehensive understanding of behavioral change over time.

Future research should consider comparative studies across different countries and athletic levels to explore cultural variations in the adoption and perception of digital goal-setting tools. Quantitative studies could complement these findings by examining the statistical relationships between app usage patterns and lifestyle outcomes such as sleep, nutrition, and injury rates. Additionally, longitudinal designs could help assess the sustainability of behavior changes initiated through technology. There is also a need to investigate the psychological risks associated with excessive self-monitoring or competitive digital environments, particularly among youth and high-performance athletes.

Coaches, sport psychologists, and athletic program coordinators should consider integrating technology-based goal-setting tools into athlete development programs, ensuring that they are user-friendly, culturally relevant, and customizable. These tools can serve not only as performance trackers but also as motivational supports, emotional regulators, and educational platforms. Institutions should also ensure that access to these technologies is equitable across all athletes, regardless of socioeconomic background. Finally, digital goal-setting should be framed as part of a broader ecosystem of support—complementing, not replacing, human mentorship and holistic lifestyle education.

Authors' Contributions

All authors equally contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

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Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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