The Hybrid Coaching and E-recreation Approach to Enhancing Community Physical Activity During and After the Pandemic

Michael Johannes Hadiwijaya Louk[1*], I Nyoman Wahyu Esa Wijaya[1], Al Ihzan Tajuddin[1], Sylvana Yaka Saputra[2], Yudo Harvianto[3], Suryansah Suryansah[4], and Anika Catharina Takene[5]

[1] Nusa Cendana University, Indonesia
[2] Nadhatul Ulama University of West Nusa Tenggara, Indonesia
[3] Palangka Raya University, Indonesia
[4] Hamzanwadi University, Indonesia
[5] Artha Wacana Christian University, Indonesia
michaellouk@staf.undana.ac.id

Abstract. The COVID-19 pandemic has fundamentally transformed community physical activity patterns in Indonesia. Social restrictions and facility closures led to a 43.8% decline in regular exercise participation. This study examines the erfectiveness of hybrid coaching combined with e-recreation platforms in maintaining and enhancing community physical activity during and post-pandemic. Using a mixed-method approach with 150 recreational sports community members and 10 coaches, findings reveal that 78% of participants increased their weekly exercise frequency, while 65% reported enhanced motivation through interactive e-recreation features. The hybrid model demonstrated significant advantages including cross-regional accessibility, time efficiency, and sustained engagement. This research contributes to the Healthy Indonesia 2045 agenda by proposing a sustainable digital-physical activity integration framework suitable for post-pandemic community wellness programs.

Keywords: hybrid coaching, e-recreation, physical activity, post pandemic, community wellness, digital sports.

1 Introduction

1.1 Background and Context

The COVID-19 pandemic has created unprecedented challenges for community physical activity engagement worldwide, with Indonesia experiencing particularly severe disruptions [1]. Data from the Ministry of Health indicates that physical inactivity

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increased by 43.8% during lockdown periods (March-June 2020), contributing to rising concerns about metabolic diseases and mental health deterioration. The Indonesian Public Health Association reported that approximately 68% of regular exercise participants abandoned their routines during the first six months of the pandemic, while sedentary behavior increased by an average of 4.2 hours daily across all age groups [2].

Traditional face to face coaching systems, which have been the cornerstone of community sports development in Indonesia for decades, became untenable under social distancing protocols. Sports facilities including community centers, public gyms, and recreational parks were closed for extended periods, ranging from three to eight months depending on regional infection rates. This disruption occurred against a backdrop of already concerning health indicators: the 2018 Basic Health Research (Riskesdas) showed that only 33.5% of Indonesian adults met WHO physical activity recommendations, while prevalence of non-communicable diseases such as diabetes and hypertension continued to rise. The pandemic's impact extended beyond physical health to encompass psychological wellbeing. Studies conducted during 2020-2021 revealed significant increases in anxiety disorders (35%), depression (28%), and stress-related conditions among populations deprived of regular physical activity outlets. Community sports clubs, which traditionally served as social support networks and stress relief mechanisms, found themselves unable to fulfill these vital functions through conventional means. The psychological toll was particularly acute among young adults and middle aged populations who relied on structured exercise programs for mental healt maintenance [4].

1.2 Digital Transformation in Sports and Recreation

The crisis precipitated by the pandemic catalyzed an accelerated digital transformation in community sports delivery, a shift that many experts argue was overdue. The emergence of hybrid coaching integrating limited face to face sessions with virtual training components and e-recreation platforms (mobile applications featuring gamification, social connectivity, and virtual competitions) represents a paradigm shift aligned with Society 5.0 principles. This Japanese originated concept, which Indonesia has increasingly embraced in national development planning, envisions human centered societies that balance economic advancement with solutions to social problems through systems integrating cyberspace and physical space. Unlike pure online interventions that often suffer from low adherence rates literature suggests typical dropout rates of 65-77% within the first three months hybrid approaches leverage the motivational benefits of in person interaction while maintaining accessibility through digital channels. International evidence from countries including South Korea, Singapore, and Australia demonstrates that blended models can achieve adherence rates 2-3 times higher than fully virtual programs. The key lies in strategic combination: periodic face to face sessions for skill assessment, technique correction, and community building, complemented by flexible digital sessions that accommodate diverse schedules and geographic constraints. E-recreation platforms have evolved substantially since early pandemic iterations. Contemporary applications integrate artificial intelligence for personalized workout recommendations, wearable device connectivity for real time biometric

feedback, augmented reality for immersive exercise experiences, and sophisticated social features enabling virtual group activities. Indonesian developers have begun creating culturally adapted platforms incorporating traditional sports and local music, addressing the cultural disconnect often experienced with Western centric fitness applications. However, widespread adoption faces significant barriers including infrastructure limitations, digital literacy gaps, and socioeconomic disparities in technology access.

1.3 Indonesian Context and Challenges

Indonesia presents a unique context for implementing hybrid coaching and e-recreation interventions, characterized by both significant opportunities and formidable challenges. As the world's fourth most populous nation with over 275 million citizens spread across 17,000 islands, Indonesia exhibits extreme geographic, economic, and digital diversity. Urban centers like Jakarta, Surabaya, and Bandung boast smartphone penetration rates exceeding 85% and reliable internet infrastructure, while rural and remote regions struggle with connectivity and device access. This digital divide creates a two-tiered reality where metropolitan populations can readily adopt technology enhanced fitness solutions, while peripheral communities remain underserved.

The government's National Sports Grand Design (Desain Besar Olahraga Nasional/DBON) for 2025-2045 explicitly recognizes the need for innovation in community sports delivery systems. Strategic priorities include expanding access to quality coaching beyond major cities, leveraging technology for mass participation programs, and developing sustainable models that can withstand future disruptions. The Healthy Indonesia 2045 initiative similarly emphasizes preventive health approaches, targeting reduction of non-communicable disease burden through increased physical activity participation across all demographic segments. These policy frameworks provide supportive environments for hybrid coaching adoption, yet implementation remains nascent and largely experimental [5].

Community sports organizations in Indonesia have historically operated with limited budgets, volunteer coaches, and minimal technological infrastructure. The pandemic forced rapid adaptation, with many groups hastily adopting video conferencing tools and social media for communication. However, these ad hoc solutions often lacked structured pedagogical frameworks, quality control mechanisms, or sustainability planning. Early attempts revealed numerous challenges: coaches untrained in virtual instruction struggled with engagement; participants reported feeling isolated despite digital connectivity; technical difficulties disrupted sessions; and dropout rates remained concerningly high. These experiences underscored the need for evidence based approaches to hybrid coaching implementation specifically tailored to Indonesian contexts [6].

1.4 Research Gap and Significance

Despite growing interest in digital fitness solutions globally, rigorous empirical research examining hybrid coaching effectiveness in Southeast Asian contexts remains limited. Existing literature predominantly reflects Western populations with different

cultural attitudes toward exercise, technology adoption patterns, and community structures. Indonesian-specific studies have largely focused on pandemic impacts on physical activity decline, with minimal investigation of intervention strategies or recovery mechanisms. This research addresses critical knowledge gaps regarding how Indonesian communities, characterized by diverse digital literacy levels, infrastructure limitations, and cultural preferences, can effectively adopt and sustain hybrid coaching models.

Furthermore, while commercial fitness applications have proliferated, systematic evaluation of their actual usage patterns, motivational mechanisms, and long term adherence within community based settings remains scarce. Marketing claims often exceed empirical evidence, and user testimonials may not reflect broader population experiences. This study contributes methodologically by employing mixed methods approaches that combine quantitative behavioral data with qualitative insights into participant and coach experiences, providing nuanced understanding beyond simple outcome metrics.

1.5 Research Objectives and Questions

This study aims to comprehensively evaluate the effectiveness and acceptability of hybrid coaching combined with e-recreation platforms for enhancing community physical activity in post-pandemic Indonesia. Specifically, we investigate three primary research questions: First, what is the impact of structured hybrid coaching interventions on exercise frequency, duration, and adherence rates compared to pre-pandemic and pandemic period activity levels? Second, which specific features and characteristics of e-recreation platforms most effectively motivate sustained participation among Indonesian users, and how do these preferences vary across demographic segments? Third, what barriers technological, social, economic, or psychological impede optimal adoption and sustained engagement with hybrid coaching models, and how might these be systematically addressed?

Secondary objectives include documenting coach perspectives on hybrid delivery challenges and opportunities, identifying best practices from successful community implementations, and developing evidence-based recommendations for policy makers, sports organizations, and technology developers. Findings are intended to inform several stakeholder groups: government agencies developing the DBON and Healthy Indonesia 2045 initiatives; community sports organizations seeking sustainable post pandemic operational models; technology companies designing culturally appropriate digital fitness solutions; and academic researchers examining behavior change interventions in diverse cultural contexts.

1.6 Study Scope and Limitations

This research focuses on recreational sports communities rather than competitive athletics or school-based programs, reflecting the population segment most affected by pandemic disruptions and most likely to benefit from hybrid approaches. Participants are adults aged 18-45, representing the demographic most engaged with digital technologies while facing significant time constraints from work and family obligations.

Geographic scope encompasses five major Indonesian cities (Jakarta, Bandung, Surabaya, Yogyakarta, and Makassar), selected to represent diverse regional characteristics while maintaining research feasibility. Rural populations, while critically important, are not included in this initial investigation due to distinct technological and infrastructural contexts requiring separate examination.

The six-month observation period provides sufficient duration to assess initial adoption and medium-term adherence, though longer-term sustainability remains a subject for future longitudinal research. This study examines hybrid coaching as implemented by existing community organizations using available commercial platforms, rather than testing custom designed interventions under controlled conditions. This pragmatic approach enhances ecological validity and practical applicability while acknowledging limitations in internal validity and causal inference. Results should be interpreted within these contextual boundaries, recognizing both the insights gained and the need for continued research across broader populations and settings.

2 Literature Review

2.1 Hybrid Coaching in Physical Activity Context

Hybrid coaching adapts blended learning frameworks to physical training environments. Previous research demonstrates that combining synchronous virtual sessions with periodic face to face assessments yields 34% higher adherence compared to fully online programs[4]. The model capitalizes on technology for scalability while preserving human connection critical for behavioral change. In developing countries, hybrid approaches address infrastructure constraints by reducing facility dependency without complete digitalization [7].

2.2 E-Recreation and Digital Engagement

E-recreation encompasses digital platforms transforming leisure physical activity through gamification, social features, and AI driven personalization. Studies indicate that gamified fitness applications increase motivation through achievement systems (badges, leaderboards) and social accountability mechanisms. However, sustainability depends on culturally relevant content and addressing the digital divide in emerging markets like Indonesia [8].

2.3 Theoretical Framework

This research applies Self Determination Theory (SDT), which posits that autonomy, competence, and relatedness drive intrinsic motivation [9]. Hybrid coaching potentially satisfies these needs through flexible scheduling (autonomy), skill progression tracking (competence), and community building (relatedness). Social Cognitive Theory further explains how observational learning in virtual communities reinforces behavior change [10].

3 Research Methods

3.1 Theoretical Framework

This study employed a mixed method explanatory sequential design, combining quantitative surveys with qualitative interviews. The approach allows statistical validation of trends followed by in depth exploration of participant experiences and coach perspectives.

3.2 Participants and Sampling

Participants included 150 recreational sports community members (ages 18-45, mean=31.4, SD=7.2) recruited from five major Indonesian cities (Jakarta, Bandung, Surabaya, Yogyakarta, Makassar). Inclusion criteria required: (1) minimum six months community membership, (2) smartphone ownership, and (3) participation in at least one hybrid coaching program during 2021-2023. Additionally, 10 certified coaches with experience delivering both traditional and hybrid programs were interviewed.

Table 1. Participant Demographics (N=150)

Characteristic	Category	n (%)
Gender	Male	82 (54.7%)
	Female	68 (45.3%)
Age Group	18-25	45 (30.0%)
	26-35	68 (45.3%)
	36-45	37 (24.7%)
Education	High School	28 (18.7%)
	Bachelor's	95 (63.3%)
	Postgraduate	27 (18.0%)

3.3 Instruments

Quantitative data were collected using the International Physical Activity Questionnaire (IPAQ) adapted for Indonesian context, supplemented by custom scales measuring erecreation engagement (Cronbach's α=0.87) and perceived coaching effectiveness (α=0.91). Qualitative data derived from semi-structured interviews exploring motivation, challenges, and sustainability perceptions.

3.4 Data Analysis

Statistical analyses included paired t-tests comparing pre-pandemic, pandemic, and post intervention activity levels, and multiple regression identifying predictors of adherence. Qualitative data underwent thematic analysis using NVivo software, following Braun and Clarke's six phase framework [11].

4 Results

4.1 Changes in Physical Activity Frequency

Mean weekly exercise frequency increased significantly from 1.8 sessions during lockdown to 4.5 sessions post hybrid coaching intervention ($t=12.34$, $p<0.001$, $d=1.89$). This represents a 150% improvement, surpassing even pre pandemic baseline levels ($M=3.2$ sessions). Figure 1 illustrates these temporal trends.

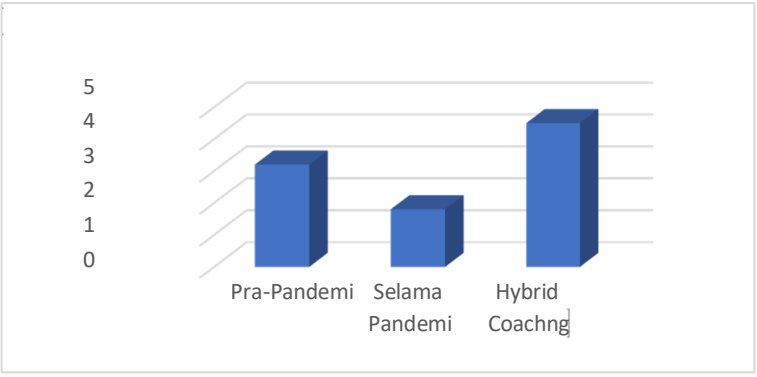

Fig. 1. Average weekly physical activity frequency across pandemic phases (N=150)

4.2 Motivational Factors in E-Recreation

Analysis of e-recreation engagement revealed flexibility (85%), social features (72%), and gamification (68%) as primary motivators. Participants particularly valued asynchronous workout options allowing schedule customization, and community challenges fostering accountability. Figure 2 details motivational factor rankings.

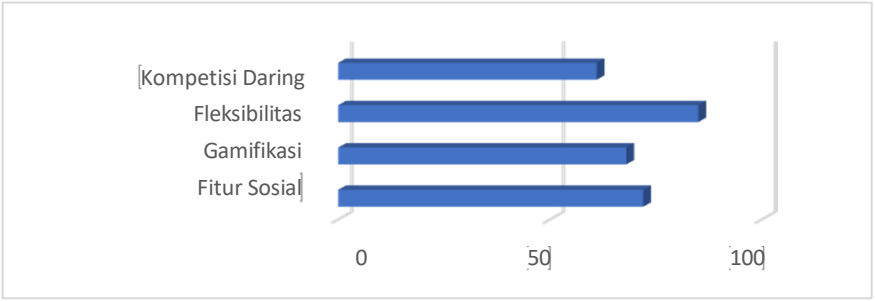

Fig. 2. Key motivational factors in e-recreation platforms (N=150)

4.3 Participant Statisfaction and Adherence

Satisfaction surveys indicated 78% positive ratings (42% very satisfied, 36% satisfied) with hybrid coaching quality. Six month adherence rate reached 71%, substantially exceeding typical online only programs (literature average: 23-35%). Figure 3 shows satisfaction distribution.

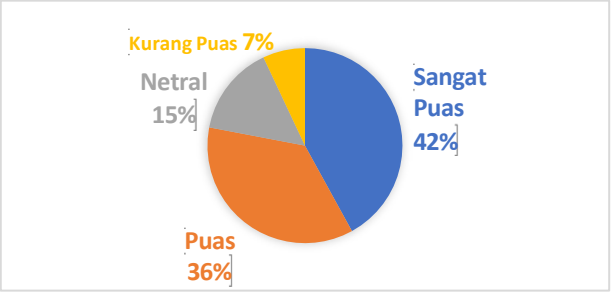

Fig. 3. Participant satisfaction with hybrid coaching model (N=150)

4.4 Barriers and Challenges

Despite positive outcomes, 38% of participants reported technical barriers, primarily unstable internet connectivity (62% of barrier reports) and limited device capability (28%). Qualitative interviews revealed coaches' concerns about assessing proper form remotely and managing large virtual groups effectively.

Table 2. Reported Barriers to Hybrid Coaching Participation

Barrier Type	Frequency (n=57)	Percentage
Internet Connectivity	35	61.4%
Device Limitations	16	28.1%
Digital Literacy	12	21.1%
Time Management	8	14.0%
Lack of Equipment	7	12.3%

Note: Participants could report multiple barriers

5 Discussion

5.1 Effectiveness of Hybrid Coaching Model

Results demonstrate that hybrid coaching effectively addresses pandemic induced physical inactivity, with effect sizes (d=1.89) indicating practical significance beyond statistical outcomes. The 150% frequency improvement aligns with Self Determination Theory predictions: flexible scheduling enhances autonomy, progress tracking builds competence, and virtual communities satisfy relatedness needs. Importantly, exceeding

pre pandemic levels suggests hybrid models may optimize engagement through accessibility gains without sacrificing motivational quality.

5.2 E-Recreation as Motivational Infrastructure

The prominence of flexibility (85%) as a motivator underscores temporal convenience as critical for working age populations. Gamification's moderate ranking (68%) suggests that while engagement mechanics attract users, sustainability depends more on practical utility and social connection. These finding challenges purely gamified approaches, advocating for balanced platforms emphasizing community features alongside achievement systems.

5.3 Policy Implications for Indonesia

These findings directly support DBON objectives for accessible community sports infrastructure. Recommendations include: (1) subsidized internet for sports communities in underserved regions, (2) national e-recreation platform development featuring Indonesian cultural sports, and (3) hybrid coaching certification programs for trainers. Such initiatives align with Healthy Indonesia 2045 targets for reducing non communicable disease burden through preventive physical activity [5].

5.4 Addressing the Digital Divide

While results are promising, the 38% barrier rate highlights persistent digital inequality. Infrastructure investment alone is insufficient; programs must incorporate offline alternatives, community device sharing models, and digital literacy training. Future research should examine hybrid effectiveness across socioeconomic strata to ensure equitable access [12].

6 Conclusion and Recommendations

This study provides empirical evidence that hybrid coaching combined with e-recreation platforms effectively enhances community physical activity in post pandemic Indonesia. With 78% of participants increasing exercise frequency and 71% maintaining six month adherence, the model demonstrates both short term efficacy and sustainability potential. Key success factors include flexible scheduling, social connectivity features, and periodic face to face reinforcement.

However, realizing widespread benefits requires addressing infrastructure barriers through policy intervention. We recommend: (1) government industry partnerships developing affordable broadband access for sports communities, (2) integration of hybrid coaching principles into national sports education curricula, (3) funding for culturally adapted recreation content reflecting Indonesia's diverse traditional sports, and (4) longitudinal research tracking long term health outcomes and cost effectiveness. As Indonesia navigates post pandemic recovery, hybrid coaching, and e-recreation represent

scalable, sustainable mechanisms for achieving national health goals. By bridging digital innovation with community based delivery, this approach offers a blueprint for resilient physical activity ecosystems capable of adapting to future public health challenges.

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Disclosure of Interests. The authors declare that there are no competing interests associated with this study. The research was conducted independently, without any financial or commercial relationships that could be interpreted as a potential conflict of interest.

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