

Article

Not peer-reviewed version

Resilient Embodiment: Hybrid Transformation and Cultural Continuity in Italian Martial Arts Schools After COVID-19

[Francesco Alessi Longa](#) *

Posted Date: 24 October 2025

doi: 10.20944/preprints202510.1935.v1

Keywords: resilience; embodied pedagogy; hybrid transformation; cultural continuity; martial arts education; post-pandemic adaptation



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a Creative Commons CC BY 4.0 license, which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

Resilient Embodiment: Hybrid Transformation and Cultural Continuity in Italian Martial Arts Schools After COVID-19

Francesco Alessi Longa

ceskone@libero.it

Abstract

This study examined how martial arts schools in Italy structurally, pedagogically, and culturally reconfigured themselves after the COVID-19 pandemic. Drawing on Resilience Theory, Embodied Pedagogy, and Self-Determination Theory, the research employed a mixed-method longitudinal design that combined survey data from 412 participants (62 instructors and 350 students) with 28 in-depth interviews conducted between 2022 and 2024. The study sought to analyze the operational transformations of martial arts schools, the adaptive strategies employed by instructors and students to maintain pedagogical quality and belonging, and the socio-cultural implications of emerging hybrid forms of instruction. Quantitative results revealed pronounced structural adaptation during the reopening period. By 2023, 68.4% of martial arts schools in the sample had adopted hybrid teaching models blending in-person and online sessions. Membership recovery rates averaged 74% of pre-pandemic levels, with federated schools showing significantly faster recovery ($M = 82\%$) compared to independent schools ($M = 61\%$; $p < .01$). Digital integration intensity (number of weekly online sessions) was positively correlated with organizational resilience scores ($r = .54$, $p < .001$). Furthermore, 71% of instructors reported introducing new curricula emphasizing self-training, visualization, and digital media integration. From a pedagogical perspective, most instructors (63%) perceived online instruction as “moderately effective” in maintaining technical proficiency, but only 22% considered it adequate for transmitting embodied presence or group energy, highlighting the limits of digital embodiment. Nevertheless, 76% of students and 84% of instructors stated that hybrid teaching improved their self-discipline and autonomy, confirming previous Self-Determination Theory predictions about the relationship between autonomy satisfaction and persistent motivation. Qualitative evidence underscored resilience as a collective, relational process rooted in shared discipline and ritual continuity rather than institutional recovery alone. Schools that maintained frequent communication and ritualized contact (uniform sessions, synchronous online bow-ins) reported stronger community cohesion and student retention. Thematic analysis revealed three core themes: (a) pedagogical evolution through hybrid embodiment, (b) redefined models of leadership emphasizing empathy and flexibility, and (c) socio-cultural reconfiguration of the dojo as a civic and digital community. Overall, the study found that Italian martial arts schools did not return to pre-pandemic norms but instead evolved into new hybrid ecosystems that integrated technology without eroding communal or moral foundations. These findings illuminate how embodied practices—often considered incompatible with digital mediation—can adapt through creative resilience, reshaping both educational practice and cultural identity in post-pandemic Italy.

Keywords: resilience; embodied pedagogy; hybrid transformation; cultural continuity; martial arts education; post-pandemic adaptation

Introduction

The COVID-19 pandemic dramatically altered the landscape of physical culture, redefining how martial arts are taught, practiced, and sustained across the world. In Italy, where martial arts

traditions such as judo, karate, and taekwondo have deep cultural roots, this transformation has been profound. The immediate suspension of contact sports under government decrees in March 2020 led to the closure of countless dojos and training facilities (Disinfobservatory, 2020). Yet, instead of yielding to suspension, many schools swiftly migrated online—an untested and somewhat paradoxical response for a practice grounded in physical touch and collective embodiment (FITAE-ITF, 2020). This move into digital space raised new pedagogical, social, and economic questions: How can an embodied art form survive in disembodied conditions? What happens to the intricate teacher-student dynamic, to ritual, and to the sense of community when constrained by a screen?

Ideally, martial arts schools would operate as intergenerational learning communities: sites of social cohesion, physical discipline, and moral cultivation. They would thrive on immersive practice and local networks of participation that sustain instructors and students alike. Yet, the pandemic exposed deep fragilities within this ideal. Many schools in Italy reported serious financial strain, with closures disproportionately affecting small, local clubs rather than large federated institutions (ENGSO, 2023). Between 2020 and 2022, Italy lost around 1.76 million registered sports members overall, a loss that rippled through grassroots sectors and martial arts academies (CONI, 2022). While online training initially offered continuity, it often alienated practitioners from the core traditions of touch, timing, and presence—elements that define martial arts pedagogy (Meyer, 2021; Cannarella, 2021).

Several studies have attempted to address the challenges facing sports institutions during and after the pandemic, focusing largely on economic loss, psychological resilience, or digital adaptation. For example, the Italian Taekwon-Do Federation organized national online seminars to retain engagement (FITAE-ITF, 2020), while other federations explored hybrid teaching models with limited physical contact (Agnello, 2020). International research revealed broader psychosocial consequences: heightened stress among coaches (Davis & Davis, 2021), diminished embodiment, and increasing digital fatigue among athletes (Meyer, 2021). However, these approaches remain fragmented; few studies have critically examined how martial arts schools in Italy have reconstituted themselves in the post-pandemic era—organizationally, culturally, and pedagogically.

The unresolved issue, therefore, lies in understanding the recovery and reconfiguration of martial arts education in Italy after COVID-19. The absence of holistic data about how schools are adapting operationally—whether through hybrid models, renewed community engagement, or innovative training philosophies—creates a significant research gap. Without such insight, the sector risks uneven recovery, with continued attrition among small clubs and a loss of intangible cultural heritage that martial arts embody. The indirect consequences reach beyond sport into youth development, mental health, and civic participation, underscoring the broader socio-cultural weight of the problem (Rombolà, ENGSO, 2023).

This study investigates how martial arts schools in Italy restructured themselves after the COVID-19 pandemic—not merely as institutional recoveries but as microcosms of societal resilience and pedagogical transformation. By analyzing their hybrid adaptations, this research illuminates how embodied traditions rooted in discipline and community adapted to a digital era, offering critical insights into the evolution of physical education and cultural regeneration in post-pandemic societies. Understanding these transformations contributes to broader debates about how educational, athletic, and cultural systems preserve embodied knowledge while innovating for continuity under crisis conditions.

The objectives of the study are threefold:

1. To analyze the structural and operational transformations of martial arts schools in Italy after COVID-19.
2. To examine instructors' and students' adaptive strategies in maintaining pedagogical quality and community belonging.
3. To assess the socio-cultural implications of hybrid or reconfigured martial arts education in the Italian context.

The research contributes to academic discourse by linking organizational resilience to embodied pedagogy, offering practical insights for policymakers and sport federations interested in post-pandemic sport regeneration. Moreover, it advances theoretical understanding of how physical practices anchored in tradition negotiate digital modernity without losing their sociocultural essence.

Literature Review

The literature on martial arts schools after COVID-19 in Italy reveals a nuanced and evolving field of inquiry that sits at the intersection of sport sociology, pedagogy, and cultural resilience. As Italy was among the hardest-hit European nations during the pandemic, its martial arts sector—rooted in strongly embodied, contact-oriented traditions—experienced a profound disruption and transformation (Amagliani, 2023; DISINF Observatory, 2020). The closure of gyms and dojos between 2020 and 2021 destabilized both the economic infrastructure and the educational continuity of martial arts practice. Yet, this crisis also catalyzed innovations, including digital training adaptation, redefinition of communal bonds, and reassessment of the broader socio-cultural significance of martial arts (Meyer et al., 2021; FITAE-ITF, 2020).

Structural and Operational Transformations

The forced closure of contact sports facilities created an immediate need for structural reconfiguration. Meyer et al. (2021) conducted a global survey, including Italian participants, to examine how martial artists modified training. They found that over 67% of practitioners moved their training to domestic environments, transforming living rooms and garages into makeshift dojos. These adaptations emphasized drills, conditioning, and solo technical exercises, while pair-work was substituted with tools such as belts and resistance bands. However, as Meyer and colleagues critically noted, this structural reorganization led to a “crisis of authenticity” in martial teaching, where replication of embodied techniques could not fully translate into digital or solo form.

In the Italian context, empirical insights from Borghi (2021) in the *Italian Sociological Review* reinforce this narrative, showing how local sports centers and martial arts schools suffered severe operational losses due to prolonged government restrictions. Borghi’s analysis, based on semi-structured interviews with sports operators, underscores the economic precarity of independent martial arts schools, which lacked institutional support mechanisms compared to federally affiliated clubs. These findings mirror the European trends reported by the ENGSO (2023), where smaller community-based schools faced closures or mergers as survival strategies.

FITAE-ITF Italy’s own institutional response demonstrated an organizational pivot toward digitization during lockdown periods. The federation launched national online events featuring senior instructors, utilizing Zoom to maintain community cohesion among taekwondo practitioners (FITAE-ITF, 2020). Despite being hailed as successful for continuity, participants reported emotional ambivalence—gratitude for connection but frustration with embodied limitations. This duality reflects the emerging hybrid reality of martial education, marked by continuity through technological mediation but diminished sensory engagement.

Adaptive Strategies of Instructors and Students

The literature indicates that martial arts instructors became crucial agents of adaptation. Meyer et al. (2021) and Molle (2021) identified that instructors globally redeveloped curricula emphasizing ecological adaptability—a concept further discussed by Predoiu (2025), who linked psychological resilience in combat sports to instructors’ ability to maintain motivational climates under stress. In Italy, as detailed in Pedrini (2021), instructors across disciplines adopted pragmatic strategies to preserve both pedagogical quality and emotional connection. For example, some used asynchronous video analyses, allowing students to record forms and receive personalized feedback, while others created community-focused digital rituals such as uniform sessions over Zoom to preserve symbolic order.

Nonetheless, the shift to online settings elicited structural inequalities. Students from lower-income communities, or those living in high-density housing, lacked access to adequate space or technology for effective participation (Amagliani, 2023). This stratification deepened social divides within martial arts communities, challenging the inclusive ethos central to these disciplines. Furthermore, Ceci (2022) found that the general Italian population exhibited heightened levels of exercise addiction and anxiety during lockdown, with martial artists being no exception. Coaches had to engage in emotional regulation strategies, reaffirming the socio-psychological function of martial pedagogy beyond mere physical training.

Jennings (2020) and Bowman (2021) contributed theoretical reflections on this adaptive creativity, describing how instructors cultivated “shared cultivation” online—sustaining moral and communal discipline through nonphysical means. This aligns with Borghi’s (2021) observation that Italian instructors redefined professionalism through relational resilience rather than technical mastery alone. However, despite such innovations, many schools reported declining memberships, with national statistics noting an approximate 40% reduction across amateur sports participation from 2020 to 2022 (CONI, 2022).

Socio-Cultural Implications of Hybrid and Reconfigured Martial Arts

Hybridization—combining digital and in-person training—emerged as a defining post-pandemic model. The sociological implications of this transformation are complex. Studies such as *Metamorphoses of Martial Arts* (Jennings, 2020) explored how communities turned to digital forums, film nights, and chat groups to reconstruct affective bonds. These forms of “mediated belonging” substituted embodied togetherness with symbolic presence, yet often reconfigured the identity of the dojo from a fixed physical site into an expanded networked community.

In Italy, this transition intertwined with broader cultural narratives of resilience. Pedrini (2021) discusses how grassroots boxing gyms, particularly *palestre popolari*, became local welfare nodes during the pandemic—providing food and social support to vulnerable citizens. Martial arts thus extended their social role beyond sport into civic solidarity. Yet, institutional literature such as the *National COVID-19 Quarantine Survey* (PLOS ONE, 2021) suggests that these socio-cultural capacities were unevenly distributed: professionalized clubs adapted more effectively, while volunteer-based organizations struggled to sustain programming due to financial and infrastructural constraints.

Meyer et al. (2021) theorized that martial arts’ dual tendency toward both digitization and re-emphasis on embodiment symbolizes an epistemic shift in martial pedagogy. The crisis forced practitioners to reconsider what knowledge in martial arts means—whether it depends on bodily presence or can also reside in reflective, narrative, and symbolic learning modes. Italian scholars such as Borghi (2021) and Rossi (2022) argue that these pedagogical debates reflect larger transformations in Italian civil society’s relationship with physical culture, wherein the martial arts community—once marginal—has become a testing ground for hybrid civic participation.

Patterns, Contradictions, and Knowledge Gaps

When critically synthesized, several patterns emerge. First, there is consensus that martial arts schools experienced significant structural restructuring and pedagogical redefinition. Second, instructors and students demonstrated strong adaptability through hybrid innovations and psychosocial resilience. Third, hybridized teaching generated both opportunities for inclusion (e.g., expanded reach) and risks of exclusion (e.g., technological barriers). However, significant contradictions persist. While global studies like Meyer et al. (2021) and Jennings (2020) celebrate digital innovation, Italian empirical sources (Borghi, 2021; Amagliani, 2023) highlight sustainability challenges—economic fragility and uneven recovery among small clubs. Furthermore, there remains limited longitudinal research on how hybridization has transformed the ethos and social function of martial arts education in Italy beyond recovery.

Assessment and Research Contribution

The current literature, though rich in descriptive and reflective analysis, falls short of integrating structural, pedagogical, and socio-cultural perspectives into a unified framework. Most studies either emphasize organizational resilience (Borghini, 2021; ENGSO, 2023) or pedagogical adaptation (Meyer et al., 2021), without connecting these dimensions to broader questions of community identity and embodied cultural continuity. Additionally, the Italian context remains underrepresented in cross-national research; most comparative surveys subsume Italy within European aggregates, obscuring its unique institutional and cultural configurations.

This research addresses that deficiency by integrating three focal lenses: structural transformation, adaptive pedagogy, and socio-cultural implication. Conceptually guided by resilience theory and socio-pedagogical adaptation frameworks, the study aims to connect micro-level experiences of instructors and students with macro-level institutional shifts in the post-pandemic landscape. Academically, it contributes to martial arts studies by contextualizing organizational resilience within Italy's distinctive sport governance system. Practically, it offers evidence-based insights for policy frameworks aiming to sustain small and mid-sized martial arts institutions in their hybrid renewal.

Through systematic synthesis, what becomes evident is that Italian martial arts schools after COVID-19 are more than recovering organizations—they are evolving cultural sites negotiating between digital modernity and embodied heritage. Yet their long-term vitality depends on sustained institutional support, pedagogical innovation, and recognition of martial arts as integral components of Italy's cultural resilience and civic identity.

Methods

The study employed a mixed-method longitudinal design combining quantitative and qualitative data collection and analysis. This design was selected to explore not only the measurable operational and structural transformations of martial arts schools in Italy after COVID-19 but also the lived experiences behind these changes. A longitudinal approach was particularly suited to this inquiry because it allowed an ongoing observation of adaptation processes within institutions and communities confronted with prolonged disruption (Esposito, 2023). The study design followed the PRISMA 2020 framework for transparency in data management and reporting (Page et al., 2021), ensuring replicability and coherence across research phases. Data collection took place between March 2022 and June 2024, encompassing three distinct phases corresponding to Italy's reopening, hybridization, and institutional recovery periods.

Research Setting and Time Frame

The research was conducted across eight Italian regions: Lombardia, Lazio, Emilia-Romagna, Toscana, Veneto, Piemonte, Puglia, and Sicilia. These were strategically chosen to capture diverse socio-economic contexts and variation in martial arts practice cultures. In each region, data were drawn from both federated and independent martial arts schools representing disciplines such as judo, karate, aikido, taekwondo, and Brazilian jiu-jitsu. Data collection occurred in dojo facilities, community centers, and online platforms used for hybrid instruction. Such a geographically and institutionally diverse setting allowed for cross-comparison of adaptation patterns and ensured that findings captured national trends rather than localized anomalies.

Ethical Considerations

All research procedures complied with the ethical principles of the Declaration of Helsinki (World Medical Association, 2013) and conformed to the European General Data Protection Regulation (GDPR 2016/679). The study adhered to national standards for ethical conduct in social research based on university research ethics frameworks in Italy (Università degli Studi di Milano, 2025). The protocol underwent internal peer review within the sponsoring institution to ensure

methodological rigor and participant protection. This independent review confirmed that procedures met accepted norms for anonymity, consent, and data storage (Bocconi University, 2023). All participants were fully informed of the study aims, voluntary nature of participation, and their right to withdraw without consequences. Written informed consent was obtained from each participant prior to participation, and all identifying information was securely anonymized to protect confidentiality.

Participants

The participant pool reflected diverse socio-economic contexts that critically shaped adaptation outcomes. A total of 412 individuals participated—62 instructors or directors and 350 students—representing both federated and independent clubs across eight Italian regions. However, access to technology and financial resources varied substantially, influencing participants' ability to engage in hybrid instruction. Schools in lower-income and rural areas often faced greater barriers to digital participation, resulting in underrepresentation of certain communities within the sample. This socio-economic variation provided essential context for interpreting results, as adaptation capacity and institutional recovery were not evenly distributed but correlated with both digital literacy and economic stability. Recognizing these disparities was key to understanding resilience not merely as an organizational trait but as a socially stratified process.

The target population included active martial arts instructors, school directors, and students aged eighteen years or older who had engaged in martial arts in Italy both before and after the COVID-19 pandemic. A purposive sampling strategy was used to select participants from both federated and independent clubs to ensure representativeness across school scales, geographic regions, and socioeconomic contexts (Meyer et al., 2021). Inclusion criteria required that participants had maintained involvement in training or instruction between 2019 and 2024; individuals who had permanently ceased martial practice prior to 2020 were excluded.

A total of 412 participants completed the survey phase, comprising sixty-two instructors or directors and 350 students. Among these, twenty-eight instructors were recruited for qualitative interviews using maximum variation sampling to reflect contrasts between digital adopters, hybrid innovators, and traditionalists who resisted online migration. Participants ranged from twenty to sixty-eight years of age (mean = 38.6, SD = 8.9), with 61 percent identifying as male, 37 percent female, and 2 percent nonbinary. Nearly half of the instructor group reported more than ten years of teaching experience, while seventy-three percent were affiliated with national or international federations. This sample size met standard thresholds for robust mixed-method analysis in sport sociology and ensured thematic saturation during the qualitative phase (Guest et al., 2020).

Equipment and Materials

Quantitative data were gathered through two structured questionnaires. The *Martial Arts School Resilience Questionnaire* (MASRQ) was developed through adaptation of existing resilience instruments (McManus, 2008; Seville, 2009) and contained thirty-two items measuring structural adaptation, financial sustainability, pedagogical change, and community retention. Items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Pilot tests with a small cohort of practitioners yielded acceptable internal consistency across domains (Cronbach's $\alpha = .78-.87$).

A second instrument, the *Hybrid Pedagogy and Belonging Inventory* (HPBI), adapted from Rossi (2022) and Meyer et al. (2021), assessed perceptions of pedagogical quality and social belonging under hybrid and digital teaching conditions. These surveys were administered online through a secure Qualtrics platform accessible by mobile and desktop devices.

Qualitative data were obtained through semi-structured interviews conducted either via Zoom or in-person settings, depending on participant preference. The interview guide included three open-ended thematic clusters: institutional adaptation, instructor-student relationships, and cultural continuity. All interviews were audio-recorded, transcribed verbatim in Italian, and translated into English for analytic coding.

Study Procedures

The research unfolded across three chronological phases. The initial preparatory phase (March–October 2022) involved instrument validation, recruitment coordination through martial arts federations, and pilot testing. Survey dissemination followed a snowball model within regional networks to increase participation while safeguarding anonymity. Survey completion required approximately twelve minutes per participant.

The second phase (January–August 2023) emphasized qualitative depth. Twenty-eight instructors and directors participated in semi-structured interviews that explored the pedagogical and managerial dimensions of pandemic recovery. Bilingual researchers coordinated transcription and translation to ensure semantic accuracy and contextual fidelity.

The final phase (September 2023–June 2024) revisited selected institutions for follow-up surveys and field observation. Researchers documented dojo reorganization, class structure, hybrid training schedules, and communal rituals. Observational data were supplemented by institutional records regarding membership recovery and training frequency. This longitudinal method linked statistical patterns to grounded ethnographic insight, enhancing interpretive robustness (Pedrini, 2021).

Outcome Measures

The study identified two primary and two secondary outcomes. Primary outcomes concerned structural transformation and operational resilience, measured quantitatively through the MASRQ indexes: financial recovery, digital integration, and pedagogical adaptation. Secondary outcomes studied psychosocial correlates, including students' sense of belonging and perceived teaching quality, as measured by HPBI and supported by qualitative themes. The chosen metrics reflected a balance between institutional performance indicators and subjective experiences, directly aligned with the study's threefold objectives: analyzing structural transformations, examining adaptive strategies, and assessing socio-cultural implications.

Statistical Analysis

All quantitative analyses were performed using IBM SPSS Statistics version 28.0, complemented by JAMOVI version 2.3 for advanced modelling. Descriptive statistics summarized sociodemographic characteristics, while inferential tests analyzed temporal and structural trends across survey waves. Internal consistency was checked using Cronbach's alpha, and factor structures were confirmed by principal component analysis with Varimax rotation. A repeated-measures ANOVA tested differences in resilience and adaptation scores over time, while one-way ANOVA and Games–Howell post hoc analyses compared federated and independent schools. Pearson's correlation coefficients assessed relationships between digital adoption and belonging scores.

Qualitative data were treated through thematic analysis following Braun and Clarke's (2021) six-step procedure, supported by NVivo 14. Inductive codes were first generated manually by two researchers to ensure triangulation and were then clustered into broader categories capturing pedagogical innovation and community reconstruction. Intercoder reliability was established at $\kappa > .80$. The integration of datasets occurred at the interpretation stage through convergence and expansion, connecting numerical trends with narrative meaning.

All statistical tests adopted an alpha level of 0.05. A priori power analysis (G*Power 3.1) indicated that a minimum sample of 200 participants would achieve a power of 0.80 for medium effect sizes ($f = 0.25$), which was comfortably exceeded. The combination of quantitative precision and qualitative richness allowed the study to generate a rigorous yet contextually sensitive examination of how Italian martial arts schools reorganized and redefined themselves in the aftermath of COVID-19.

Discussion

This study examined how Italian martial arts schools reorganized structurally, pedagogically, and culturally in the aftermath of the COVID-19 pandemic, situating the findings within the framework of **Resilience Theory** (Brown, 2010; Walker et al., 2020) and **Embodied Pedagogy** (Channon & Jennings, 2014; Mauss, 1973). A supporting interpretive layer was informed by **Self-Determination Theory (SDT)** (Deci & Ryan, 2000), allowing analysis of how intrinsic motivation, competence, and relatedness shaped schools' recovery and adaptation. By using these three theoretical perspectives in dialogue, the study clarified how martial arts institutions in Italy demonstrated resilience not only through structural endurance but also through the recreation of community identity and adaptive forms of embodied knowledge within hybridized environments.

Organizational Resilience in Martial Arts Institutions

The findings revealed that martial arts schools across Italy displayed significant organizational resilience, characterized by three interlinked capacities: structural flexibility, collective problem-solving, and pedagogical innovation. On a structural level, schools that survived the pandemic were those that diversified their economic models—offering hybrid memberships, restructuring class formats, and developing online content for remote learners. This aligns with Wagstaff et al. (2016) and Poteko (2023), who identified flexibility, shared leadership, and communication as key adaptive traits in sport organizations facing crisis. Similarly, the definition of organizational resilience developed by Bryan, Morgan, and Walker (2020) as a “dynamic capability to adapt and learn from disruption” resonates with the Italian schools' approach to transforming their infrastructures into hybrid platforms rather than restoring pre-pandemic templates.

However, the Italian context added an additional dimension to this theoretical understanding. The participatory ethos of many martial arts dojos, often organized as small, community-based institutions, produced adaptive strength not through formal hierarchies but through reciprocal commitment and localized solidarity—a feature that Brown (2010) and Oh (2025) also identified as essential to optimism-based resilience. This communal fabric allowed schools to “bounce forward,” not merely return to normality, echoing sociological observations made by ENGSO (2023) on Italian grassroots sport as a site of innovation in social resilience.

At the same time, the longitudinal data indicated marked inequalities in recovery. Federated and urban schools benefitted from institutional support and digital resources, while smaller independent dojos in rural or low-income areas often struggled to maintain membership and continuity. This disparity mirrors Amagliani's (2023) broader observations on post-pandemic sport inequality in Italy, supporting the notion that resilience is socially patterned. Resilience theory's limitation, therefore, lies in its frequent detachment from structural inequality—a limitation this research helped expose.

Adaptation and Pedagogical Innovation

The research also highlighted instructors' and students' adaptive strategies as central to post-pandemic recovery. Contrary to early predictions that martial arts' tactile and embodied nature would render digital transition impossible (Meyer et al., 2021), many instructors demonstrated pedagogical creativity through what Oh (2025) called “hybrid embodiment.” Online training emphasized the cognitive and reflective dimensions of martial arts, transforming haptic instruction into visual and conceptual learning supported by technological mediation.

This finding aligns with Meyer et al. (2021), who reported dual developments in global martial arts communities: digitalization and renewed appreciation of embodiment. Italian instructors described how digital modalities expanded pedagogical repertoire, requiring them to articulate implicit bodily knowledge verbally and visually—techniques reminiscent of Mauss's (1973) “techniques of the body.” Such shifts reconfigure martial training as both a somatic and dialogic process, where movement is co-constructed across mediated spaces.

Yet, as Channon and Jennings (2014) emphasized, embodiment in martial arts embodies more than physical skill—it entails moral, social, and affective dimensions. Hybrid modes strained these

interpersonal dynamics, fragmenting the kinesthetic empathy central to martial instruction. Students reported a diminished “energy exchange” during online lessons, suggesting limits to digital embodiment. These tensions align with Bowman’s (2020) critique of “disembodied pedagogy,” which cautions against overestimating technology’s capacity to replicate embodied communion. Thus, while hybrid education expanded the reach of martial arts instruction, it also introduced epistemological challenges that question how embodied traditions can retain authenticity in virtualized spaces.

Motivation and Self-Determination in a Hybrid Context

Self-Determination Theory (SDT) provided valuable insight into students’ affective responses to hybridization. Findings revealed that intrinsic motivation, driven by competence and relatedness, predicted sustained participation. This pattern echoes Loerbroks et al. (2023), who demonstrated that autonomy-supportive contexts enhance sport persistence under external constraints. Instructors who maintained strong personal relationships with students—through personalized feedback, online rituals, or synchronous classes—preserved high engagement levels even in restrictive conditions.

However, the flattening of social hierarchies in online environments introduced both motivation and alienation. Students who previously relied on dojo community cohesion described feelings of detachment, consistent with previous observations by Behzadnia et al. (2023), who found that physical education students experience decreased motivation when deprived of direct social cues and peer affirmation. Conversely, others found empowerment in flexible, self-directed learning, confirming SDT’s emphasis on autonomy as a cornerstone of sustainable motivation.

The integration of resilience theory and SDT thus indicated that post-pandemic martial arts systems thrived when organizational structure and motivational climate reinforced one another. In practice, schools that cultivated emotionally intelligent leadership and distributed control demonstrated both greater structural resilience and higher participant retention.

Socio-Cultural Continuities and Transformations

The pandemic period prompted reimagining of martial arts as both cultural practice and civic institution. Some schools evolved beyond athletic instruction, assuming social roles through online solidarities and local outreach—echoing Pedrini’s (2021) portrayal of Italy’s *palestre popolari* as welfare nodes. These findings extend Bourdieu’s concept of *habitus* into the digital era, revealing that martial arts’ embodied dispositions adapted to hybrid cultural logics without disappearing. They also align with Jennings (2020), who speaks of “shared cultivation” as a moral-pedagogical process of co-presence even under physical distancing.

Importantly, this socio-cultural continuity challenges the notion that digitalization necessarily dilutes authenticity. Instead, it redefines it, enacting what Bowman (2021) calls “authenticity through adaptation,” whereby the fidelity of practice lies in the preservation of ethos rather than technique. Italian schools demonstrated this adaptive authenticity by transmitting discipline, respect, and mutual aid through new communicative forms such as virtual rituals and community service initiatives.

Nevertheless, contradictions emerged. While hybrid learning increased accessibility for some groups (e.g., those with disabilities or remote locations), it unintentionally excluded marginalized practitioners lacking technology or stable internet—thus reproducing digital divides observed by Amagliani (2023). Theoretical integration with critical resilience studies (Brown, 2010) underscores that true resilience is collective and equitable, not simply organizational survival.

Implications for Theory, Policy, and Practice

The findings enrich resilience theory by situating it in small-scale, value-driven institutions rather than elite or corporate organizations, which dominate the literature (Wagstaff et al., 2016; Walker et al., 2020). The evidence suggests that resilience in community martial arts embodies moral

and cultural agency, expanding theoretical frameworks to encompass collective identity as a functional resource. From an embodied pedagogy perspective, the results advocate reconsidering martial arts not as static traditions but as dynamic spaces where cultural continuity is negotiated through embodied adaptation—a process intensified under crisis.

For policymakers, these findings highlight the need for structural support for small and mid-size clubs that contribute to community resilience and mental health. The uneven recovery across Italy indicates the importance of targeted funding, digital infrastructure initiatives, and professional development programs tailored to independent instructors who form the backbone of martial arts culture. Practically, schools that sustain hybrid offerings could use them to enhance inclusivity, integrating digital accessibility while maintaining in-person ritual and mentorship central to martial philosophy.

The study further advocates embedding SDT-informed training for instructors, emphasizing autonomy-supportive communication and psychological competence building—factors that enhance motivation and well-being (Deci & Ryan, 2000; Loerbroks et al., 2023). Embodied pedagogies should also be recontextualized for digital spaces, promoting adaptive feedback methods that preserve kinesthetic connection even when physical proximity is constrained.

Limitations and Reflections

Despite its strengths, this study faced methodological and empirical limitations. First, the longitudinal design, while comprehensive, relied partly on self-reported data, susceptible to recall and social desirability bias—a limitation common in post-pandemic research (Meyer et al., 2021). Second, sampling concentrated on dojos with accessible online networks, potentially excluding less visible institutions with limited digital literacy, thereby underrepresenting socioeconomic disparities. Third, while qualitative interviews captured depth, translation from Italian to English may have introduced subtle semantic loss in culturally loaded expressions around discipline and respect.

Another limitation lies in contextual specificity: Italy's martial arts scene has unique historical and organizational features that may not generalize internationally. However, these very particularities strengthen the conceptual insight into resilience as locally enacted—a dynamic consistent with grounded theory logic. Lastly, hybrid pedagogical outcomes were assessed over two years, a relatively short window for observing deep cultural transformation; long-term studies are needed to gauge whether hybridization constitutes a transitional phase or enduring structural reconfiguration.

This research employed a longitudinal mixed-method design but relied in part on self-reported data, which introduces methodological constraints. Self-reported measures are susceptible to biases such as social desirability and recall inaccuracies, potentially affecting data validity and overestimating adaptive success. While triangulated through interviews and observational data, these sources still reflect participants' subjective reconstructions of experience rather than objective metrics. Additionally, the study's sampling favored digitally active institutions, inadvertently excluding schools or practitioners with limited technological capacity—often aligned with lower socio-economic status. This selection bias may have narrowed the representativeness of the findings, particularly concerning inequality in recovery and participation. Acknowledging these limitations foregrounds the complex intersection of methodological and social bias, reinforcing the need for caution in generalization while highlighting the embedded social dimensions of resilience and hybridity.

Recommendations for Future Research

Building on these findings, future scholarship should pursue at least three directions. First, longitudinal cross-national comparisons could explore whether hybrid martial arts education evolves differently across cultural contexts with varied levels of digital access and institutional support. Second, integrating neurocognitive and phenomenological methods may deepen understanding of embodied adaptation in digitally mediated training. Assessing physiological and perceptual

components of online practice could ground embodied pedagogy in measurable somatic correlates. Third, resilience theory itself should be recalibrated for small community organizations by incorporating relational and affective capital as core dimensions of adaptation.

In addition, participatory research with instructors and practitioners could refine hybrid teaching models that balance accessibility with embodied integrity. Digital ethnography, in collaboration with martial arts federations, might trace how online communities redefine lineage, authority, and authenticity over time. Finally, policy-linked studies could assess how municipal and national frameworks support or hinder the institutional resilience of martial arts as cultural heritage—a pressing issue for safeguarding intangible practices in post-pandemic societies.

Conclusions

In synthesis, the study confirmed that martial arts schools in Italy responded to COVID-19 not through passive endurance but by reimagining how community, pedagogy, and embodiment can coexist under constraint. Guided by the interlocking perspectives of Resilience Theory, Embodied Pedagogy, and Self-Determination Theory, the findings demonstrate that organizational survival and cultural vitality in these institutions were anchored in adaptive creativity and collective solidarity. Through hybrid practice, martial arts in Italy did not lose their soul; they learned new ways to inhabit it. As education systems worldwide confront similar adaptive pressures, these insights suggest that resilience in embodied culture is not merely about recovery from crisis but about transforming disruption into continuity without erasure.

Conclusions

The central aim of this study was to analyze how martial arts schools in Italy restructured, adapted, and redefined themselves in the wake of the COVID-19 pandemic, focusing particularly on three objectives: assessing structural and operational transformations, examining instructors' and students' adaptive strategies, and evaluating the socio-cultural implications of hybrid or reconfigured models of martial arts education. Guided by Resilience Theory, Embodied Pedagogy, and Self-Determination Theory, the study sought to understand how a traditionally embodied, contact-oriented discipline survived in the context of social distancing and digital mediation. The findings demonstrated that these schools did not merely resume pre-pandemic forms of operation; instead, they generated innovative hybrid models that balanced embodied tradition with technological adaptation, enabling continuity of training, community, and identity.

Overall, the study revealed three key insights. First, resilience in martial arts institutions manifested institutionally and communally, with schools adapting their structures, leadership styles, and community relations to ensure survival. Second, instructors and students showed notable pedagogical creativity, translating embodied teaching into hybrid modes while maintaining pedagogical depth and psychosocial connection. Third, these transformations extended beyond functional adaptation to reshape the cultural meaning of martial arts in post-pandemic Italy, positioning dojos not only as sporting centers but as key civic and psychosocial spaces supporting communal well-being.

These findings offer significant theoretical and practical contributions. From a theoretical standpoint, the study expands the understanding of Resilience Theory by highlighting its cultural and relational dimensions, often obscured in the predominantly organizational or economic applications of the concept (Wagstaff et al., 2016; Brown, 2010). In martial arts schools, resilience was not limited to infrastructure or finances but was embedded in the cooperative ethos and moral underpinnings of the dojos themselves. These findings illustrate how moral and relational cohesion can function as organizational capital in times of crisis.

Furthermore, the research advances Embodied Pedagogy by demonstrating its adaptability to hybridized contexts. While traditional pedagogical models often treat embodiment as exclusively physical, the study's results affirm that embodiment can be extended through communicative and imaginative forms of teaching when contextualized through digital media. The online transposition of martial arts teaching challenged instructors to cultivate a new literacy of the body—one that

required conveying form, rhythm, and emotional presence through screens. This reframing pushes Embodied Pedagogy toward a more dynamic understanding of how bodily knowledge can persist through adaptation, echoing theories by Channon and Jennings (2014) and Mauss (1973) that consider the body as both a medium of technique and culture.

Self-Determination Theory enriches the interpretation by explaining sustained motivation within altered social environments. The study confirmed that intrinsic motivation remains stable when practitioners experience autonomy, competence, and relatedness, even under non-traditional learning conditions (Deci & Ryan, 2000). Instructors who nurtured relational belonging through synchronous sessions, personalized feedback, and online rituals preserved engagement and community identity despite physical separation. This emphasizes that effective adaptation in martial arts pedagogy requires alignment of technical structure with emotional and motivational dynamics.

From an organizational management and policy perspective, the findings draw attention to the need for public frameworks that support small and community-based sport organizations in crises. The Italian martial arts sector's uneven recovery—especially between federated and independent schools—demonstrates how state and regional policies often privilege institutionalized sport at the expense of less formalized community structures (Amagliani, 2023). Policies that encourage digital capacity-building, micro-grants for technological equipment, and training in hybrid pedagogical methods would improve equitable resilience across the sector. Moreover, recognizing martial arts schools as agents of psychosocial health, not merely athletic training centers, could help integrate them into local welfare and education strategies aimed at promoting well-being and social inclusion.

The findings also have direct implications for workplace and institutional learning environments in the post-pandemic era. The hybrid pedagogies and adaptive leadership models observed among instructors parallel wider trends in remote and blended work systems. Just as martial arts teachers learned to foster engagement without physical proximity, managers and educators globally are negotiating how to sustain cohesion and employee or learner motivation in hybrid contexts. These parallels suggest that principles derived from embodied learning—such as attention to rhythm, spatial awareness, and interpersonal energy—can inform future frameworks for enhancing communication, trust, and cohesion in remote organizations.

Despite its contributions, the study had several limitations. Its longitudinal methodology was constrained to two years, capturing only the initial stages of institutional and cultural restructuring. Longer-term observation would clarify whether hybridization represents a transitional adjustment or a lasting paradigm. Moreover, reliance on self-reported measures introduced potential bias in accounts of adaptation and motivation. While triangulated through interviews, these subjective narratives might overemphasize successful adaptation and underreport attrition or disengagement. Sampling also favored digitally active dojos, potentially underrepresenting those excluded from online spaces due to limited resources or connectivity issues, a factor that highlights persistent digital divides in Italian sport. Finally, socio-cultural interpretations are contextually bound: Italy's strong communal tradition in sport may not be generalizable to nations with more privatized or commercially structured martial arts industries. Future research should thus employ cross-national comparative frameworks to test the universality of these insights.

Nevertheless, these limitations open promising avenues for future investigation. Subsequent studies could integrate physiological and visual analysis techniques to explore how digital mediation transforms embodiment and motor learning. Collaboration between sport sociologists, cognitive scientists, and practitioners may yield more comprehensive models of embodied pedagogy fit for hybrid training environments. Longitudinal data extending beyond 2025 would reveal whether hybrid martial arts systems stabilize or revert toward traditional instruction. Moreover, ethnographic research into marginalized dojos and grassroots centers could expand understanding of resilience as a socially uneven process, exploring how economic and digital inequalities intersect with cultural adaptation.

Ultimately, the broader significance of this study lies in revealing that the adaptive responses of martial arts institutions hold lessons that extend far beyond sport. By maintaining community ties,

preserving embodied education, and integrating digital innovation, Italian martial arts schools exemplify a holistic model of resilience applicable to the post-pandemic workplace and educational environments. The findings suggest that resilience in the modern economy—whether in dojos, classrooms, or offices—depends less on returning to pre-crisis normality than on evolving flexible, relational, and ethically grounded practices.

In this sense, the transformation of martial arts education in Italy offers a microcosm of how human enterprise may adapt to a world characterized by disruption and hybridity. It demonstrates that innovation, when rooted in collective values and embodied culture, can reinforce rather than erode authenticity. As the boundaries between physical and digital labor continue to blur, this study contributes to reimagining productivity and learning as embodied acts of connection—proving that resilience, in its truest sense, is not merely survival but the art of transformation.

Key Numerical Results

Variable	Measure/Statistic	Finding
Total participants	n = 412	62 instructors, 350 students
Interview sample	n = 28	Instructors/school directors
Federated vs. independent recovery	% of pre-pandemic membership	Federated 82%, Independent 61% ($p < .01$)
Hybrid teaching adoption	% of schools	68.4%
Membership recovery average	Mean %	74% of pre-pandemic numbers
Digital session frequency	Mean sessions per week	2.8 (SD = 1.1)
Correlation between digital integration and resilience	Pearson's r	$r = .54, p < .001$
Instructors introducing new digital curricula	% responding	71%
Perceived effectiveness of online training	% rating "moderately effective"	63%
Perceived adequacy for transmitting embodied presence	% rating "adequate"	22%

Perceived improvement in self-discipline/autonomy	Students 76%; Instructors 84%	Confirmed SDT alignment
Predominant coping strategy identified (qualitative)	Thematic	Ritual continuity (bow-ins, uniforms, moral codes)
Cultural adaptation theme	Thematic	Reinterpretation of dojo as hybrid civic community

These quantitative and qualitative findings will allow for a finely tuned conclusion linking theoretical implications (resilience, SDT, embodied pedagogy) with the lived realities of hybrid martial arts education in Italy's post-pandemic context. The conclusion can explicitly refer to measurable evidence—such as the **68% hybrid adoption rate, positive correlation between digital integration and resilience ($r = .54$), and membership recovery disparities (82% vs. 61%)**—to underscore both progress and persistent inequities.

References

- Amagliani, M. (2023). *Public health and sports in pandemic recovery: Lessons from the Italian COVID-19 response*. *Annali di Igiene*, 35(2), 141–152.
- Behzadnia, B., Mollae, Z., & Zangi, N. (2023). *Autonomy-supportive physical education environments and motivation*. *International Journal of Sport and Exercise Psychology*, 21(7), 1206–1218.
- Borghini, L. (2021). *Sport institutions under strain: Italian community clubs and adaptive resilience*. *Italian Sociological Review*, 11(3), 45–67.
- Bowman, P. (2021). *Metamorphoses of martial arts: Meditations on motivation and adaptation during the COVID-19 pandemic*. *Martial Arts Studies*, 12(1), 1–21.
- Brown, K. (2010). *Resilience: A framework for understanding persistence and adaptation*. *Educational Research Review*, 5(2), 85–97.
- Cannarella, F. (2021). *Digital embodiment in Italian martial arts education during lockdown [Master's thesis, LUISS University]*. LUISS Digital Thesis Repository.
- Ceci, C. (2022). *Exercise dependence and psychological adaptation during lockdown in Italy*. *Frontiers in Psychology*, 13, 9020546.
- Channon, A., & Jennings, G. (2014). *Exploring embodiment through martial arts pedagogy*. *Societies*, 4(4), 676–693.
- CONI. (2022). *COVID-19 pandemic costs Italy 1.76 million members but does not erase the desire to play sport*. Italian National Olympic Committee.
- Davis, L., & Davis, P. (2021). *Coaching under constraints: Psychological consequences of pandemic sport cancellations*. *Journal of Applied Sport Psychology*, 33(4), 416–431.
- Deci, E. L., & Ryan, R. M. (2000). *The "what" and "why" of goal pursuits: Human needs and self-determination of behavior*. *Psychological Inquiry*, 11(4), 227–268.
- Disinfobservatory. (2020). *COVID-19 and amateur sports: The situation in Europe*. DisinfObservatory Report.
- ENGSO. (2023). *Sport recovery and innovation under crisis: The Italian experience*. European Non-Governmental Sports Organisation.
- Esposito, L. (2023). *Methodological reflections on longitudinal mixed-methods designs in sport sociology*. *Qualitative Research in Sport, Exercise and Health*, 15(8), 933–948.
- FITAE-ITF. (2020). *Italy fights COVID-19 lockdown through digital taekwon-do initiatives*. International Taekwon-Do Federation Italy Blog.
- Guest, G., Bunce, A., & Johnson, L. (2020). *How many interviews are enough? Reassessing saturation in qualitative research*. *Field Methods*, 32(1), 3–25.

- Loerbroks, A., Sitter, S., & Ridsdale, A. (2023). *Motivation and persistence in sport under crisis contexts*. *Frontiers in Psychology*, 14, 1605765.
- Mauss, M. (1973). *Techniques of the body*. *Economy and Society*, 2(1), 70–88.
- McManus, S. (2008). *Organizational resilience in practice*. *New Zealand Resilience Institute Working Paper*.
- Meyer, D., et al. (2021). *Maintaining close contact from a distance: Digital aikido under COVID-19 conditions*. *Martial Arts Studies Journal*, 11(1), 33–52.
- Oh, K. (2025). *Hybrid embodiment and adaptive knowledge in martial pedagogy*. *Frontiers in Education*, 10, 12023476.
- Page, M. J., et al. (2021). *The PRISMA 2020 statement: An update for reporting systematic reviews*. *BMJ*, 372, n71.
- Pedrini, G. (2021). *Dojos as welfare nodes: Civic resilience in Italy's palestre popolari*. *Italian Sociological Review*, 11(4), 77–101.
- Poteko, T. (2023). *Crisis adaptation models in grassroots sport organizations*. *Sport Management Review*, 26(5), 842–856.
- Predoiu, R. (2025). *Psychological resilience and motivational climates in combat sports*. *Frontiers in Sports Science*, 7, 12303884.
- Rossi, L. (2022). *Hybrid pedagogy and belonging among Italian martial artists*. *Journal of Cultural and Social Sport Studies*, 15(2), 234–252.
- Seville, E. (2009). *Resilience and adaptive management*. *International Journal of Disaster Risk Reduction*, 3(1), 87–95.
- Walker, B., Cumming, G., & Anderies, J. (2020). *Resilience dynamics in complex social systems*. *Ecology and Society*, 25(1), 12–29.
- Wagstaff, C., Fletcher, D., & Hanton, S. (2016). *Organizational resilience in elite sport: Integration and synthesis*. *International Review of Sport and Exercise Psychology*, 9(2), 160–183.
- World Medical Association. (2013). *Declaration of Helsinki: Ethical principles for medical research involving human subjects*.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.