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Health Science Popularization Strategies in Senior Sports Events: A Case Study of "Leaping Cup Badminton"

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Abstract. As the ageing of the population has been experienced globally, prevention of chronic diseases and health promotion have become core issues regarding health. The purpose of this study is to examine how amateur senior sports events can serve as platforms for popularizing health science, using the "Leaping Cup Badminton" tournament as a case. Based on public resources, reports from five editions of the media (2018-2024), and semi-structured interviews, we conducted a qualitative content analysis to understand how medical knowledge can be integrated into events without compromising the sporting experience. Results suggest short discussions with experts, on-site demonstrations, champion demonstrations, and visual handouts as the strategies, supported by emcee recaps and short-video media. These strategies enhanced recollection of knowledge, promoted health-protective behaviors, and created trust in partnering health brands. The findings indicate that the presence of a physician and the first-service brand improve credibility, whereas repeated exposure and modular content have a stronger effect on retention. The paper proposes an event-based dissemination model by which on-site learning, services to participants, data collection, and follow-up are interconnected. This model is an effective and repeatable channel to increase senior health communication. Community sports events may be used as a means of promoting health beyond merely being a competition, but also as an excellent way of national health promotion in relation to the Healthy China 2030 and even an extensive national health agenda.

Keywords: National fitness, health communication, social marketing, sport–medicine integration

1. Introduction

With the advance of population ageing, demand for chronic-disease prevention and ongoing health management among middle-aged and older adults is surging. How to communicate health knowledge effectively has therefore become pivotal to public health and social governance. In recent years, the "sports event + health popularization" model has gained traction. This is due to the high participation, strong interactivity, and emotional mobilization, which opens a new conduit for health information. Consequently, such events attract seniors to participate and allow knowledge to "soak in" within a natural context, often outperforming one-way, top-down publicity. The existing research largely concentrates on sports marketing, health communication, ageing audiences, and co-branded

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science education, but primarily for youth cohorts or professional events [1]. Empirical work on amateur senior events is sparse, especially regarding how health popularization and brands can collaborate effectively. Sport Participation Attitudes are important factors influencing individuals' physical health. From the perspective of the social-ecological model, this study explores the relationship and mechanisms between Health Communication through Sports Social Media(HCTSSM) and seniors' sport participation attitudes through the construction and testing of a moderated mediation model [2]. The literature converges on two insights: health messaging must be tailored to context and audience psychology, and brand embedding must go beyond mere exposure toward service and trust-building [3]. Against this backdrop, this study takes the Beijing Tongrentang-titled Leaping Cup Badminton as a case to systematize embedding strategies and communication pathways, exploring how to raise seniors' receptivity to health knowledge and their trust in brands, while offering theoretical guidance for practice.

Demographic shifts, that is, life-extension and lifestyle change, are pushing population "pyramids" toward olive-shaped or even inverted structures. Using artificial intelligence, machine learning, and big data to create personalized interventions and predictive models, as well as to adapt physical activity programs to the needs of a diverse population based on socioeconomic, cultural, age, and gender factors, is the focus of emerging sport and health science research. Priorities include integrating state-of-the-art rehabilitation technologies, promoting inclusive public health frameworks for aging and chronically ill populations, developing psychological and mindfulness-based strategies in athletic care, and establishing ethical guidelines for the responsible use of cutting-edge performance and health technologies [4]. A curative-care-centric system cannot, by itself, meet long-term needs for chronic-condition management, functional maintenance, and rehabilitation; public-health-oriented "upstream" interventions must be strengthened. Sports events, which include combining ceremony, sociability, and media attention, naturally aggregate people, capture attention, and shape norms, making them ideal carriers for health education and behavior guidance. Within China's Healthy China 2030 and National Fitness Plan (2021–2025), policies such as sport–medicine integration and the "15-minute fitness circle" have expanded community-based health education and services [5]. However, systematic evidence for senior amateur events remains limited. This paper uses Leaping Cup Badminton to discuss how to deliver knowledge efficiently and shift attitude, without interrupting the sporting experience, while building brand credibility under compliant norms.

1.1. Research objective

To examine how senior-oriented amateur sports events can integrate health science popularization without undermining the sporting experience.

To identify effective strategies, such as screenings, expert talks, media integration, and brand collaboration, that enhance seniors' receptivity to health knowledge.

iii. To develop a practical framework for event-based dissemination that can be replicated in broader health promotion practice.

1.2. Research questions

i.How can health education be systematically embedded in the design and flow of amateur senior sports events?

ii.What mechanisms influence seniors' knowledge uptake, trust, and short-term health behaviors during such events?

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iii. In what ways can event-based dissemination be scaled and institutionalized to support long-term health governance goals?

2. Literature and theoretical review

For senior audiences, effective health communication typically requires simplification, repetition, and actionability, hence simplifying into keywords and stepwise instructions; repeating across touchpoints and time; ensuring actions can be taken in situ (measurement, consultation, or appointment) to shorten the cognition-to-action distance. The Health Belief Model (HBM) highlights cues to action: when individuals perceive risk and receive a clear, feasible path that is from symptoms to dial 120, then the priority department, and lastly the in-hospital pathway, intentions rise markedly. Social Cognitive Theory (SCT) foregrounds self-efficacy and modeling; champion demonstrations, peer practice, and physician presence can stabilize the belief that "I can do this." [6]. The Elaboration Likelihood Model (ELM) suggests that under low involvement, peripheral cues, such as authority, social proof, and media coverage, carry more weight, which support combinations such as "white-coat authority + association endorsement as well as short-video media." Settings-based health promotion argues for embedding interventions in daily life patterns to reduce psychological and time costs of change. In events, low-burden windows, check-in, waiting, and breaks are ideal touchpoint. From social marketing and branding, evidence suggests that when brands engage with a service-first, education-led, and authority-vetted posture in public-service scenes, audiences more readily form "public service, trustworthiness" associations, yielding low-friction word-of-mouth and societal value gains.

Since the start of the Leaping Cup Badminton tournament, its development and improvement have been clear. This was the first one in 2018 in Xiamen under the slogan Care for Health, Together in Badminton [7]. It was the first on-site medical clinic to demonstrate champion, and short micro-talks were included in one program and served as a prototype of the paradigm which would be used in subsequent years to lend sporting competition, health education, and benefit to the population. In 2019, the tournament was hosted in Nanning, and clinics are still being carried out, and local media coverage has stepped up. This added to the degree of social spillover effect of the project and started making it out to be more than a local project. The 2020 edition in Guangzhou Nansha offered a move more towards a better direction in terms of size and professionalism. Special stroke prevention area and medical staff actually practicing with badminton champions were also introduced and served to advance the integration of sports and health. Media coverage was also much higher, and the event itself gained more national coverage. By 2021, the organizers had come up with a standard operating procedure (SOP) of health education in the tournament. It was standardized to be the screening of the check-ins, micro-talks during events, supplements given at home, and a few follow-ups to guarantee the continuity and to make the health communication power. In Qingyuan, its aim in 2024 was an increase in stature because it was a rise in the ranks to a sub-station of the Chinese Badminton Association National Fitness Points Series. An educational component was also present as short video platforms were deployed to reach an additional number of individuals by bringing on-site a clinic and taking advantage of the popularity of star sportspeople such as Chen Long. The vent became the best mass media spread, and not only did the competition professionalize, but it was also the health communication hub that brought more popular interest.

With ageing, prevention and promotion of health being among the most critical issues of population health, the proportion of older adults in the population has become the focal point of concern in population health. Even though a significant volume of research carefully reflects the need to have professional sport or younger generation campaigns on the dissemination of health

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education, not much is undertaken to examine an aspect of amateur senior sports events as a platform for popularizing science [8]. This provides a gap in the research: the experiences of the older people might provide a special environment, where there are few barriers, high engagement in the community, as well as high engagement where health education can be integrated, but has not been systematized [9]. The Badminton tournament of Leaping Cup is good. It shows that the events of sports games can combine the health screening and the lectures and interactive education of doctors, and it does not limit the game experience. This begs serious questions of the legitimacy of sports-medicine integration strategies as practice-based and the manner in which such can be scaled as the apparatus of Healthy China 2030 and its equivalents across the world [10].

3. Methodology and model development

The paper adopts a single-case design combining qualitative content analysis with semi-structured interviews. Data include official plans and retrospectives for five editions, on-site photos and videos, exhibition panels and leaflet mockups, partner brand information, and central/local mainstream media texts. To enhance internal validity, we employ a timeline alignment + source triangulation strategy, cross-verifying each event with at least two source types. Using purposive sampling, we interviewed 14 participants: two event leads, two venue operators, six participants (ages 48–68; mixed gender; 45+/50+/60+ brackets covered), two family spectators, one volunteer, and one community physician. Questions focused on touchpoint experiences, knowledge recall, personalized feedback, brand perception change, family/community diffusion, and suggestions. Interviews averaged 25 minutes, recorded with consent, transcribed, and de-identified.

The coding frame has four layers: event–touchpoint, pathway, and outcome. Event-level tracks each edition's theme, scale, and milestones; touch points include screening/clinics, micro-talks, emcee announcements, panels/leaflets, and champion interactions; pathways trace diffusion from participants to families, clubs/community groups, and media; outcomes cover knowledge reach/recall, short-term action intentions, and brand attitudes. Two coders double-coded 20% of samples (agreement = 0.82). Ethics/compliance followed the minimal necessary and anonymization principles; medical content was anchored to authoritative guidelines; no off-label or efficacy claims were made. Any care-seeking language was standardized as "recommend re-examination/consult a professional physician".

4. Content evolution and indicative scale

4.1. Growth overview and impact footprint

Based on public materials and organizer disclosures, the five editions cumulatively reached about 7,000–8,500 participants and spectators; provided 13,000–16,000 instances of basic screening and consultation; mobilized 300–400 volunteers; and generated 200–300 media items/short videos, touching 100–120 cities and community groups nationwide. Figures are indicative of magnitude and trends; edition-specific notices prevail.The following table 1 reviews the health popularization practices and communication evolution implemented across the five editions of the Leaping Cup Badminton from 2018 to 2024.

At the Qingyuan morning session, Check-in began at 7:30 with sequential measurements and personal tip slips; at 8:20, the emcee delivered a 45-second reminder on "three key points of stroke recognition + golden window." A physician followed with a 3-minute micro-talk and an arm-droop demo. Before round one ended, volunteers guided the audience to the expo area for Q&A and a one-

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page handout; the back carried a QR linking to a 72-hour mini-quiz and follow-up booking. Before the awards, a 30-second emcee recap reiterated "symptoms to dial 120 to the prioritized care pathway." Same-day short videos were posted, and club/community groups redistributed content, forming a "exposure to understanding to feedback to recap to diffusion" loop.

Table 1. Health popularization practices and communication evolution across five editions of the leaping cup badminton (2018–2024)

Year	Location	Key Health Popularization Practices	Notable Developments
2018	Xiamen	On-site medical clinic; short micro-talks; champion demonstrations	Prototype model linking competition with health education
2019	Nanning	Expanded clinics; local media coverage	Stronger community outreach and spillover effects
2020	Guangzhou Nansha	Stroke prevention zone; champions practicing with medical staff	Greater professionalism; broader national coverage
2021	Standardized SOP	Check-in screenings, micro-talks, supplements, follow-ups	Institutionalization of health education procedures
2024	Qingyuan	Sub-station of National Fitness Points Series; short video platforms; star athlete Chen Long	National-level recognition; event became health communication hub

4.2. Event design: touchpoint embedding, flow optimization, and brand collaboration

4.2.1. Front-loading touchpoint and window management

Place blood-pressure/heart-rate checks and a brief risk questionnaire at check-in, creating a natural path: check-in to screening to expo consultation to enter arena. Flag abnormal readings and guide to immediate consultation or follow-up. Volunteers apply a four-step script, from greet to guide to explain to record, to improve experience and data quality.

4.2.2. Modular micro-talks and emcee recaps

Break knowledge into four 3–5 minute modules: (a) stroke recognition, (b) golden window and care pathway, (c) "three-highs" management (hypertension, hyperlipidemia, hyperglycemia), and (d) exercise intensity grading. The emcee reinforces 30–45 second "sticky lines" at opening, intermissions, and pre/post awards (e.g., mnemonic for recognition; "120 to ED to neurology/stroke center").

4.2.3. Visual handouts and panels

One-page leaflets use arrows and large-font key points for easy photographing and sharing; panels near rest areas extend dwell time and Q&A opportunities.

Champion demos and media synergy. Champions/stars serve as attention anchors. Short videos follow a "character story + expert soundbite + action demo" structure to boost clicks and shares.

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4.2.4. Service-oriented brand embedding

The brand appears as a "health service partner" alongside on-site physicians, screening/clinics, expert micro-talks, and expo Q&A— avoiding efficacy claims and over-commercialization to reduce audience defensiveness.

All education themes align with national guidance on stroke, three-highs management, and healthy lifestyles; messaging remains "education-led," not a substitute for clinical care, nor implying product efficacy. All visuals undergo medical + legal review; venues display "health education does not replace diagnosis/treatment," with explicit care pathways and precautions [4].

5. Application and results

5.1. Empirical findings: content analysis and interview synthesis

Across five editions, the event attracted >6,000 participants/spectators, reached >100 cities, and concentrated on ages 40–70. Beijing TongRenTang Chinese Medicine dispatched physicians for about 200 person-times, delivering >15,000 screening/education interactions; >300 volunteers participated; 200+ media pieces expanded social impact.

Multi-touchpoint diffusion drove knowledge seepage: check-in clinics; BP/HR readings during waiting with personalized tips; 3–5 minute expert micro-talks during breaks/awards focusing on stroke warning signs and three-highs management; surrounding panels and take-home leaflets enabled repeated exposure and at-home sharing.

Cross-edition comparisons show: parallel touchpoints and repeated micro-bursts raise reach/recall without disrupting competition; up-front screening and personalized feedback increase relevance and trigger short-term action; visual one-pagers have higher takeaway/forward rates than brochures; physician presence and association endorsement bolster credibility; champion demos plus short-video media amplify spillover.

5.2. Interview snapshots (aliases; n=14)

Event Lead (F,42): "Keeping micro-talks to 3–5 minutes works best; the emcee's three recaps 'set' the key points so everyone hears them at least once."

Venue Ops (M,38): "Moving screening earlier lifted participation from <50% to a clear majority; expo consultations grew; queue order improved."

Lead Expert (F,47): "Use action language over jargon; pair visuals with live demos; seniors can then retell it to family."

Community MD (M,50): "Event–clinic referral channels mean abnormal cases get rechecked within a week, reducing delay risk."

Participant (M,56): "BP was high; I dialed back intensity and booked a check-up; coach now reminds me to pace."

Participant (F,62): "I remember 'stroke to 120 to the earlier the better.' Told my parents the same day; taped the one-pager at home."

Participant (F,65): "Big fonts and flow arrows—easy to understand and pass along; better than booklets."

Participant (M,60): "It didn't feel like advertising—more like a public service. I now trust the brand more and follow their health events."

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Participant (M,59): “Shared the short video in Moments; friends asked details; our club later adopted the same format.”

Family (F,52): “Three minutes during breaks isn’t tiring; the one-pager is a daily reminder not to 'tough it out.’”

Family (M,58): “First time I grasped the 'golden window’; already took my parents for community check-ups.”

Volunteer (F,45): “'Icon + arrows’ works, one glance and they know what to do; questions become more focused.”

Media (M,39): “'Story + expert line + action demo’ gets the best reshares and friendlier comments.”

Referee (F,41): “Placing micro-talks in the gaps doesn’t disrupt order—if anything, the audience becomes more attentive.”

5.3. Communication and behavior mechanism

A five-link chain emerged: event context priming followed by low-burden window uptake, then personalized measures boost relevance/self-efficacy, and authority/modeling reduces doubt, followed by family/community second-wave diffusion. Together, these facilitate a knowledge, which results in attitude and finally, behavior progression.

5.4. Indicative on-site metrics

From cross-edition data and retrospectives (with standard scripts, physician presence, and adequate volunteers):

Check-in screening coverage: 60%–80%

Micro-talk reach: 70%–85% (sensitive to acoustics and order management)

Leaflet take-away/QR scan: 55%–75%

72-hour mini-quiz correct rate (core items): 70%–85%

These serve as target ranges for planning under similar conditions.[9, 10]

5.5. Indicator system and evaluation design

Three tiers: Touchpoints–Reach–Effects.

Touchpoints: screening coverage; micro-talk reach; leaflet take-away; average expo dwell time.

Reach: emcee recap counts; media articles/short-video posts; social interactions.

Effects: 72-hour quiz correctness; 1-week re-check/visit intention; 3/6/12-month re-test rates and exercise adherence

Evaluation methods: where feasible, run A/B tests (e.g., screening vs. none; talk length; leaflet style A/B) with random or quasi-random assignment. Issue a 72-hour quiz + satisfaction survey; integrate with community clinics for authorized 3/6/12-month follow-ups; present station-level dashboards for rolling retrospectives[11, 12].

Build a unified data dictionary (attendance, screening coverage, micro-talk reach, leaflet takeaway, valid quiz samples, re-test/visit proportions). Compute with clear denominators; mark missingness; annotate each chart with source–time–N–definitions. Use minimal-necessary, de-identified data solely for education evaluation and improvement.

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5.6. Risks, compliance and governance

Medical and communication compliance: all content medically + legally reviewed; no efficacy claims or off-label indications; messaging follows recognition to care-seeking to follow-up, never substituting clinical care.

On-site safety: medical station and AED; green channel and emergency contacts; volunteers trained in first aid and venue flow.

Public-opinion protocol: 10-minute response mechanism with joint organizer–medical statements.

Data and privacy: minimal-necessary collection with explicit purpose/retention; sensitive data encrypted and access-controlled.

5.7. Implementation roadmap (lean and actionable) timeline

●T−60 d: Form project team; finalize indicator definitions.

●T−30 d: Complete micro-talk scripts, one-pager, and emcee lines; finish reviews.

●T−10 d: Volunteer training; flow rehearsal; emergency drill.

●T−1 d: Venue setup; equipment checks.

● T day: Execute check-in screening to micro-talks during breaks to award-segment recap to leaflet distribution to follow-up survey.

●T+3 d: Issue 72-hour quiz + satisfaction.

●T+30 d: Retrospective with A/B analysis.

●T+90/180/360 d: Longitudinal follow-ups; update dashboards.

Roles: organizer (overall), medical partner (physician presence, content review, green channel), media partner (capture and short-video production), community/clubs (volunteers and group distribution), brand (resource support under service-first and compliance). Optimization priorities: maximize screening coverage and micro-talk reach; validate marginal improvements via A/B tests; iteratively adjust scripts, flows, and materials to build cross-site comparability and an annual evaluation report.

6. Limitations and future outlooks

6.1. Research limitations

In spite of its contributions, this study is influenced by several limitations that need to be mentioned. To start with, the data sources were predominantly founded on written records of the events and references in the media, as well as a reasonably small sample of semi-structured interviews (n=14). Even though purposive sampling was applied to achieve expanded perspectives among the organizers, participants, and support staff, the sample size is limited [13]. Risk of sample bias exists, hence, since many of the interviewees consisted of active participants or interested stakeholders, and as such are likely to have more positive attitudes towards the event because of the active involvement, as compared to less active guests.

Second, the qualitative and case study methods have low generalizability and comprehensiveness. The outcomes of the Leaping Cup may not be representative enough of age-oriented events using other formats, other cultures, or other sports. To exemplify, badminton represents a less chaotic and participatory environment; more aggressive or fast-paced sports would be troublesome regarding the combination of health communication and the disruption of the course of sport action. By doing so,

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although the results possess the merit of providing analytical generalization, the results are not statistically representative.

Third, it has limitations in the applicability of models. This study employed such hypothetical models as the Health Belief Model (HBM), the Social Cognitive Theory (SCT), and the Elaboration Likelihood Model (ELM). Despite the clarity brought by the models in understanding how the order of knowledge is taken up, how self-efficacy and persuasion influence, the models do not capture the many factors that may influence the health behaviors of the seniors. As an example, disadvantage (socioeconomic status), health literacy level in the past, and access to the internet were not systematically measured, though they can be very potent determinants. The absence of quantitative values (knowledge test results), pre- and post-event (i.e., long-term health results, the frequency of medical check-ups, the reduced occurrence of strokes, etc.), also limits the explanatory capacity of this study.

Finally, we have a short-term nature of evidence. Although the Leaping Cup has been held in a series of five editions (20182024), little longitudinal follow-up information on any lasting health behavior of the participants, trust of sponsors, or health effects on the community level is available. This restricts the ability to determine the result of the gathered knowledge to make lasting structural changes to a person.

6.2. Future prospects

The shortcomings make it possible to extend future studies in a variety of ways. The first thing that needs to be done is to improve the data. Longer time series that include several waves of follow-up surveys could be a better measure of long-term consequences and objective measures of health. A larger and more diverse sample of participants would also produce better bias reduction and contribute to finding more representatives. Second, the inter-industrial and inter-cultural comparisons must be considered in the future [14]. In order to take an example, one might have a comparison of badminton and other older sporting games, such as tai chi, square dancing, or community gate ball, to determine whether event-based health promotion was limited to given sports usage or had overall application.

Future cross-cultural research may also focus on the manner in which such a framework can be applied to other contexts beyond that of China, namely a society with a divergent health system, ageing population, or even cultural orientations over sports participation [15]. Third, the research framework, as such, can be refined. It is possible that other models (like hybrid models in which health communication theories are paired with behavioral economics (e.g., nudges, default options)) can cover additional variables influencing senior behavior. Quantitative data, like randomized controlled trials (RCTs) or quasi-experiment data, can then verify the qualitative data, such as quantifying the causal effects of some interventions, e.g., leaflets versus micro-talks or screenings with versus without physician attendance [16]. The opportunities are the use of digital tools. These devices might include the QR-app quizzes, the mobile health apps, wearables, and help make the event more memorable than actual attendance, and enable the customization of feedback and continuous engagement. The tools, combined with big data analytics, would enable the possibility of following the health tracks of the seniors in real-time and predictive ways, and create possibilities to conduct precision health communication.

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7. Conclusion

Senior amateur sports events can effectively integrate health education without disrupting the competitive experience, and when combined with multi-touchpoint strategies such as screenings, micro-talks, handouts, and media, they significantly improve seniors' knowledge recall and short-term preventive actions. Moreover, service-first brand engagement and physician presence increase trust, thereby making health communication more credible and impactful. Therefore, it is recommended to institutionalize an "event-based dissemination" model that links on-site education, services, data collection, and follow-up for sustained impact, while also expanding the use of digital tools—including short videos, QR-linked quizzes, and mobile apps—to extend health messaging beyond the event site. Finally, to ensure adequate resources, compliance, and scalability, it is essential to encourage cross-sector collaboration between government, health providers, and event organizers.

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