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Risk Communication Practices in The 7 Summit Wonosobo Trail Run: A Case Study of The Sobat Tektok Community

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ABSTRACT

The rapid growth of trail running in Indonesia has not been followed by a proportional increase in safety literacy, resulting in an escalation of fatal mountain incidents caused by the runner's optimism bias and competitive ego. This study examines how the Sobat Tektok (SOTEK) community designs and executes risk mitigation communication for the extreme 7 Summit Wonosobo 2025 event. Employing a qualitative descriptive case study, data were collected through in-depth interviews with five core informants, digital field observations within community WhatsApp groups, and a comprehensive standard operating procedure (SOP) document analysis. Grounded in Peter Sandman's Risk Communication Theory and the Social Amplification of Risk Framework (SARF), the results reveal that SOTEK successfully integrated rigid pre-event screening and data-driven technical message visualization on digital media platforms to deconstruct individual cognitive distortions. During live field execution, communication dynamically shifted from top-down authoritative broadcasting to an adaptive, decentralized, peer-supported dialogue led by field sweepers. This empathetic field interaction effectively dismantled individual athletic arrogance, allowing exhausted or gear-deficient runners to execute rational, self-selected "Did Not Finish" (DNF) choices. Consequently, this collective, culture-centered communication system transformed regulatory constraints into life-saving parameters, culminating in an impeccable zero-casualty and zero-accident record.

Keywords: Risk Communication, Trail Running, Sobat Tektok, Risk Perception, Safety Culture.

INTRODUCTION

Risk communication within extreme sports management, particularly in trail running activities throughout Indonesia, is currently facing unprecedented challenges

driven by the sport's rapid transformation from an informal, community-based hobby into a lucrative sector of adventure tourism. This sport, which intersects directly with high-risk mountainous landscapes, has recorded a massive trend of increasing participation globally. According to the International Trail Running Association (ITRA), the number of trail runners worldwide has surged by 231% over the last decade Thuany et al., (2024). In Indonesia, this phenomenon is heavily mirrored by data from the Indonesian Trail Running Association (Asosiasi Lari Trail Indonesia / ALTI), which notes rapid growth of cross-country running communities across more than 20 provinces, where race registration slots consistently sell out within minutes. However, this massive quantitative growth among runners has not been followed by a proportional increase in safety literacy, thereby triggering a rise in fatal incidents that signals a profound vulnerability in risk communication management.

Several tragic events occurring between 2025 and early 2026 serve as an urgent wake-up call and post-event empirical justification regarding the systemic fragility of sports safety literacy in Indonesia. These include the sudden deaths of two runners at the 2025 Siksorogo Lawu Ultra due to cardiac arrest Werdiono (2025), the tragedy at the 2026 Lebarun Sentul Ultra where a participant died during an unsanctioned and unauthorized race Murtadho, (2026). Although these 2026 incidents occurred chronologically after the 7 Summit Wonosobo 2025 event, their inclusion in this study serves as a critical macro-contextual baseline. They prove that the safety vulnerabilities observed during the 2025 race were not isolated, episodic anomalies, but rather early indicators of an escalating, unresolved structural pattern of risk communication failure within the national extreme sports ecosystem. This trajectory of fatal incidents exposes a wide discrepancy between objective technical danger (hazard) assessments and the safety literacy of amateur runners, which is frequently distorted by optimism bias. Optimism bias acts as a cognitive distortion where individuals tend to underestimate their probability of experiencing risk because they perceive their physical competence or past experiences to be superior or adequate. Consequently, they frequently dismiss technical procedures and safety boundaries in pursuit of competitive performance or personal records..

Within disaster mitigation paradigms, risk communication is firmly established as a baseline determinant variable across all disaster management phases, spanning from pre-event preparation to real-time emergency responses (Andrianto et al., 2024). Drawing upon previous research on audience reception toward environmental issues, the acceptance of risk messages is heavily determined by the recipient's experiential background and how the media frames the information. In the context of trail running, this explains why runners actively engage in a negotiation of meaning regarding the hazard warnings issued by event organizers. Furthermore, risk communication within special-interest hobby communities faces a unique hurdle known as risk-seeking behavior. Within extreme sports subcultures, life-threatening natural challenges are often not perceived as hazards to be avoided, but are instead socially constructed as symbols of high status, prestige, and social capital on digital media platforms (Agilonu et al., 2017; Laurendeau, 2008)

The urgency of this study is specifically directed toward the arena of the 7 Summit Wonosobo 2025 event. This specific race route presents an accumulation of extreme physical workloads, with an estimated total distance reaching 60 kilometers and a cumulative elevation gain approaching 6,000 meters. Technical analysis indicates that the critical phase occurs at the end of the first day toward Mount Bismo, where participants

are confronted with complex navigation challenges in total darkness (night running) while their physiological energy reserves are severely depleted (Perrotta et al., 2022) . Such extreme fatigue is medically proven to degrade the cognitive abilities of runners, impairing fast decision-making processes on technical, dangerous terrains (Jaeschke & Sachs, 2012). This risk peaks on the second day as runners conquer Mount Sindoro and Mount Sumbing at altitudes above 3,000 meters above sea level (MDPL), where the drop in partial pressure of oxygen (hypoxia) poses a real threat of Acute Mountain Sickness (AMS (Luks et al., 2024).

Despite the high fatality risks associated with this event, official mitigation information provided by organizers often undergoes significant attenuation (weakening of meaning) once it enters informal community spaces. Community members tend to downgrade mandatory gear regulations such as the requirements to carry emergency blankets, whistles, or waterproof jackets into mere administrative formalities needed to pass the pre-race gear check, rather than viewing them as critical life-saving instruments. To dissect the mechanism of how this risk information is amplified or attenuated within informal groups,this study adopts the Social Amplification of Risk Framework (SARF) (Kasperson et al., 1988). Through this circular approach, top-down risk information from organizers is not passively swallowed; instead, it is continuously discussed, debated, and reconstructed by community members through hybrid interactions on new media platforms, such as WhatsApp Groups (Nugroho et al., 2020).

Prior scholarly literature on extreme sports management and risk communication has predominantly focused on formal, top-down dissemination channels engineered exclusively by race directors or institutional organizers. These studies tend to treat sports communities merely as passive recipients or compliance endpoints of risk messages. Consequently, existing research fails to address horizontal, peer-to-peer message modulation, specifically how information is organically decoded, altered, or even resisted within autonomous, closed digital networks of special-interest groups.

Based on this situational review, the true novelty of this research lies in its analytical focus on the message modulation strategies independently carried out by informal special-interest community networks to bridge the gap between formal regulations and the psychological compliance of runners. By shifting the analytical lens from vertical institutional broadcast to horizontal community-driven reinterpretation, this study uncovers how safety cultural boundaries are negotiated in real-time. Driven by these core gaps, the research question formulated in this study is: How does the Sobat Tektok community reinterpret and operationalize risk communication during the 7 Summit Wonosobo event?

LITERATURE REVIEW

In the context of extreme adventure tourism, risk communication is recognized as a complex process of meaning negotiation rather than a mere one-way, top-down transmission of technical safety rules, bridging the gap between actual physical hazards and the athletes' mental constructions Littlejohn, et al., 2017) .Viljoen et al. (2021) identified that the intrinsic characteristics of trail running, marked by severe elevation fluctuations and unpredictable terrain, demand a rigid, integrated risk management system to ensure participant safety. This is highly aligned with disaster management paradigms, which establish risk communication as a baseline determinant variable across all mitigation phases, spanning from pre-event preparation to real-time emergency responses (Andrianto et al., 2024).

Kasperson et al. (1988) and Renn & Siovic (1992) pioneered the Social Amplification of Risk Framework (SARF) to deconstruct how risk information undergoes amplification or attenuation when passing through informal social stations within a group. In the digital era, Nugroho et al. (2020) demonstrated that risk messages are no longer linear; they are dynamically filtered and reframed within digital spaces and online community networks before impacting behavior. This framework underpins how subjective perceptions are shaped socially, showing that risk information is never purely objective but is actively reconstructed by the receiving community.

Sandman (2012) proposed a fundamental risk communication theory formulated as Risk = Hazard + Outrage, which balances technical expert data with public emotional variables. Kim (2012) operationalized the *Hazard* dimension by highlighting the objective, scientific data of physical harm in high-altitude endurance sports, such as hypothermia, hypoxia, and cardiac arrest on volcanic terrains. Conversely, the *Outrage* dimension encompasses psychological elements, level of trust, and perceived control, which Hackett and Roach, (2001) are found to be heavily distorted by the inherent optimism bias and risk-seeking behaviors typical of extreme endurance athletes.

Beebe & Masterson (2012) along with Gouran (2011) conceptualized group communication as a symbolic process where collective identity and safe realities are constructed through interactions to achieve mutual understanding. In hobby-based circles, Frey et al. (2020) argued that emotional proximity among members serves as an essential conduit for safety guidelines to successfully translate into concrete actions in the field. This collective dynamic relies heavily on what Wenger (1998) terms *Communities of Practice*, where safety regulations like Cut-Off Times (COT) and mandatory gear are established through peer-to-peer social influence and sustained through *Self-Policing*-a distributed social responsibility for mutual surveillance (Arnstein, 1969).

Based on the literature studies above, informal athletic communities and peer groups play a pivotal role in shaping risk mitigation behaviors, acting both as channels for safety information and as enforcers of collective safety culture. Group interaction is expected to not only distribute physical data regarding safety hazards but also actively manage the psychological "outrage" and cognitive biases of individual runners. Research shows that active peer-to-peer surveillance and strong community compliance can significantly enhance safety practices and adherence to mandatory regulations in extreme sports Oswald et al., (2020). Investigating how group communication dynamics function to mitigate these extreme physical threats remains highly relevant, particularly in addressing the vulnerability of trail runners on high-altitude volcanic tracks and supporting safety-oriented policies within extreme sports tourism

METHODS

This study used a qualitative approach with a descriptive case study design to explore the communication patterns and risk reduction strategies constructed within informal running communities. The sampling method applied in this research was purposive sampling, which entails the deliberate selection of informants based on specific criteria, their relevance of knowledge, and their active involvement in risk mitigation communication activities within the group.

To satisfy the participant selection criteria, the informants were structured into two distinct operational categories, totaling 10 individuals:

a) Key Informants (3 informants): Comprising strategic decision-makers and field coordinators who hold absolute structural roles within the community. Specifically, this includes Anwar Jaeni (Leader of Sobat Tektok), who designs safety policies, Irwansyah (Sweeper), who executes technical risk mitigation during events, and Boy Aldar (Communication Decision Maker), who manages information flows across platforms.
b) Supporting Informants (7 informants): Comprising active community members participating in the event, encompassing a diverse demographic of both high-experience senior trail runners and newly joined amateur runners (newbies) to gauge the variations of individual risk perception and optimism bias, as well as members who are actively engaged on digital platforms

The interview procedures were conducted through rigorous, synchronous online in-depth interviews via Google Meet to capture personal, highly detailed, and socio-historical perspectives of the actors. These open-ended, semi-structured sessions utilizing video-conferencing technology were meticulously directed toward evaluating the implementation of Peter Sandman's risk communication dimensions examining how technical hazards (hazard) and subjective communal anxieties (outrage) are managed as well as analyzing how peer-to-peer surveillance (self-policing) shapes a collective safety culture, without imposing external coercive configurations

Furthermore, to ensure data triangulation and research validity, the observation procedures were executed using an active participant observation approach. The researcher immersed directly into the field as an active runner, joining the community's physical progression throughout the extreme volcanic terrains of the 7 Summit Wonosobo 2025 event. This allowed for the empirical monitoring of tacit behaviors, real-time instructional message modulation, and safety compliance at critical high-altitude phases. Concurrently, digital observations were seamlessly extended to the community's hybrid communication spaces, specifically mapping out text-based logistics coordination, risk filtering, and early warning announcements within internal WhatsApp groups and official Instagram channels. This empirical data was further cross-verified with a comprehensive document analysis of the event's standard operating procedures (SOP), mandatory gear checklists, and regulatory guidelines (W.Creswell & N.Poth, 2018; Yin, 2018).

Qualitative data analysis was executed through an interactive model consisting of data reduction (selective coding of narratives surrounding risk and *optimism bias*), data display (structured text matrices and communicative flowcharts), and conclusion drawing or verification to systemically map out the communication dynamics (Miles, Huberman, & Saldaña, 2014). Although the qualitative nature of this case study means the results cannot be broadly generalized to all sporting cohorts, this study provides deep, contextual insights into the vital role of group communication in minimizing physical fatalities during high-altitude extreme sports, which is highly relevant to the development of safer adventure tourism policies in Indonesia.

RESULTS AND DISCUSSION

a. Shaping Risk Perception in the Community

The construction of risk perception regarding extreme endurance events within informal sports communities does not emerge from institutional coercion, but is dynamically engineered through organic group communication patterns on digital

platforms. Ekawati et al., (2025) argued that these interactive networks are highly critical in cultivating a shared understanding of physical risk management before field deployment. The Sobat Tektok (SOTEK) community represents a robust and highly active collective of outdoor enthusiasts, trail runners, and mountaineers in Indonesia whose identity is bound to the "tektok" methodology—an extreme style of mountain exploration where a high-speed ascent and descent must be completed within a single 24-hour window without overnight camping or open bivouacs.

When SOTEK organized the internal 7 Summit Wonosobo 2025 event, consolidating seven volcanic peaks (Mounts Prau, Sindoro, Sumbing, Kembang, Bismo, Pakuwaja, and Sikunir) into a single continuous linear timeline, it imposed an accumulation of technical hazards at an extreme scale (60 to 90 kilometers with an accumulated vertical ascent of roughly 6,000 meters). Within this informal organizational culture, the community's digital networks functioned as critical "social amplification stations," as conceptualized in the Social Amplification of Risk Framework (SARF) by Kasperson et al., (1988). Theoretically, this framework dictates that objective hazards do not automatically translate into public awareness; instead, risk signals must be transmitted by key communication nodes within the collective and decoded through social channels to shape actual risk perception within the community.

Empirical findings demonstrate that the formulation of event risk perception begins with the strategic dissemination of initial risk signals by primary community leaders and coordinators. Managing an endurance event of this magnitude requires a rigid pre-event screening process to mitigate biological threats before they manifest on the trails. Anwar Jaeni, the community leader, acts as the primary authority node by introducing organizational risk signals through a strict vetting mechanism that evaluates participants based on past performance metrics and mandatory health records (Interview, May 2026). This explicit risk communication functions as an administrative blueprint to dismantle a false sense of security before an official crisis occurs. Anwar Jaeni explained the rationale behind this initial communication signal:

> *We always hope that fatal health crises can be completely avoided. Therefore, before participants can even join this event, I personally select them based on a specific set of criteria. They must have a minimum record of performing 'tektok' (high-speed climbing) on mountains above 3,000 meters above sea level, maintain a weekly running mileage of at least 30 kilometers on Strava, and submit formal waivers alongside their medical history. My core assumption is that if these criteria are met and the participant passes the selection, those extreme physical risks can be minimized, or at the very least, they already understand their own bodily limits.* (Interview with Anwar Jaeni, May 2026).

However, because individual volcanic peaks in Wonosobo are highly familiar to many SOTEK members, a critical cognitive vulnerability known as "optimism bias" frequently emerges among the runners. Thuany et al., (2024) demonstrated that within extreme endurance sports, this cognitive bias often causes athletes to overestimate their past experience, leading them to dangerously trivialize an accumulated 6,000-meter vertical load and reduce mandatory survival gear such as emergency blankets, whistles, and windbreakers to mere bureaucratic compliance. To counteract this psychological defiance and ensure that technical realities are effectively transmitted, the coordinators adopted a highly data-driven yet accessible communication tone within their digital

networks. Boy Aldar, a core decision-maker and digital influencer for the community, strategically channeled these risk signals through the community's WhatsApp group and Instagram networks by utilizing a strict chronological reminder system and clear data visualizations (Interview, May 23, 2026). Boy Aldar stated that:

> *When we broadcast risk information through our WhatsApp groups, we intentionally rely on concrete data, outlining the exact distances, elevation metrics, and specific trail characteristics. We heavily emphasize these technical parameters to the newer members who have just joined the community, as the veteran runners usually understand the stakes. To prevent crucial safety alerts from being buried under casual chat, we execute a strict chronological reminder system: we post teaser graphics on Instagram one month prior, intensify the technical data streams two weeks before the event, and continuously pin critical logistical updates inside the WhatsApp chat during the final week.*(Interview with Boy Aldar, May 23, 2026).

The critical transformation of event risk perception occurs when these structural signals undergo horizontal peer reinterpretation among the supporting informants (participants) within the WhatsApp interface. The strategic transparency of technical parameters such as explicitly alerting runners that Mount Bismo (18:30 WIB) would be navigated in total darkness serves as a vital cognitive correction against athlete overconfidence, especially since conventional GPS tracking devices often conceal up to 32% of the actual accumulated elevation due to fractal geography limitations, as identified by Sanchez et al., (2025).

The impact of this digital group communication on participant risk perception is empirically proven by the testimonies of the supporting informants. For instance, Informant 2 (an amateur participant) admitted how the initial optimism bias influenced his perception before entering the digital discussion loop:

> *Initially, I regarded the 7 Summit Wonosobo event as a regular, ordinary challenge because I had frequently climbed Mount Prau and Mount Sikunir separately. I thought that windproof mountain jackets and emergency blankets were merely administrative formalities that would unnecessarily clutter and fill up my hydropack.* (Interview with Informant 2, May 2026)

This dangerous cognitive bias was systematically dismantled as senior runners in the WhatsApp group acted as active social amplification stations. When the official technical data matrix was pinned, veteran runners immediately shared personal accounts of intense night winds, sudden hypothermia, and the drop to freezing temperatures during the dry season. This horizontal interaction attached intense social meaning to the abstract hazard metrics. Informant 4 (a supporting informant) highlighted this transition:

> *Observing the discussions in the WhatsApp group, especially during the route deconstruction phase, we, as fellow amateur runners, finally realized that this event carried high risks and was literally a life-threatening challenge, rather than just a casual running agenda.*(Interview with Informant 4, May 2026).

Furthermore, Informant 5 (another supporting participant) noted that this digital group communication forced a structural shift in collective behavior:

> *The group chat enabled us to constantly remind one another. In my opinion, every risk dimension presented by the management was highly positive. Consequently, we as participants obediently cross-checked our mandatory gear without feeling coerced by the organizing committee.* (Interview Informant 5, May 2026).

This collective dynamic demonstrates how the community effectively utilizes self-policing and decentralized authority to maintain safety. Within this framework, physical aid stations specifically the Water Stations (WS) located at Lapangan Patak Banteng (KM 19) and Kedai Kunang-Kunang (KM 53) cease to be mere refreshment hubs; instead, they function as vital, two-way interpersonal communication channels for the field crew (Marshall and Sweeper) to execute real time monitoring of the runners' vital capacities. This operational setup aligns with dynamic athletic monitoring principles established by (Gutiérrez et al., 2025), where evaluating a runner's constant velocity and pacing variability during the opening third of an ultra-endurance route yields a predictive correlation above 95% regarding their total finish time and overall physiological survival rate.

Rather than issuing top-down, authoritarian commands that could trigger psychological reactance, emotional outbursts, or defensive denial from highly competitive athletes, the sweeper team acts as a supportive companion. Hidayat et al., (2025) emphasized that this process functions as an organic form of participatory, bottom-up risk communication, where field personnel leverage established communal trust and shared values akin to an endogenous, culture-centered support network to motivate safe, self-protective actions among the athletes. This cooperative communication strategy allows runners to voluntarily accept their physical limits and opt for a Did Not Finish (DNF) status on Mount Sindoro before attempting the even more brutal climbs of Mount Sumbing. By transforming potential emotional resistance into a rational compliance with safety boundaries, the community achieved an optimal safety record for the 7 Summit Wonosobo 2025 event, concluding the extreme marathon with zero major injuries or casualties and successfully establishing a resilient, self-sustaining group safety culture.

What these findings mean theoretically within the SARF framework is that informal digital networks do not merely relay data; they serve as dynamic cognitive battlegrounds where risk is socially amplified within the community to conquer psychological vulnerabilities.

In this case, the WhatsApp group operates as a decentralized social amplification station that disrupts the runners' optimism bias. Theoretically, when the initial *risk signals* (the raw technical data provided by Anwar and Boy) enter the community channel, they undergo an intensive process of information filter*ing* and peer reinterpretation. The amateur runners initially filter this information through a lens of overconfidence, minimizing the threat. However, when veteran runners insert their experiential narratives into the text stream, they attach acute sociocultural meaning to the cold numbers.

This peer-to-peer group communication effectively amplifies the perceived volume of the risk. The threat of a 6,000-meter elevation gain is transformed from a distant, abstract administrative constraint into an immediate, socially shared threat. This cognitive shift triggers what SARF defines as a secondary behavioral impact: a collective self-regulation mechanism. Because the risk has been successfully amplified and validated by trusted peers rather than an authoritarian institution, participants willingly undergo behavioral modulation. They actively execute rigorous self-policing and safety double-

checks, demonstrating that within informal collectives, horizontal social amplification can successfully substitute top-down coercive regulations to maintain safety boundaries in extreme sports.

b. The Reality of Risk Communication in Field Events

When the 7 Summit Wonosobo 2025 event transitioned from digital mobile preparation to real-world execution, the abstract safety protocols pinned in the WhatsApp networks faced the raw, unpredictable reality of the mountain trails. On the high-altitude routes of Mount Sindoro and Mount Sumbing, the ultimate challenge for the field crews, specifically the sweepers and marshals, focused heavily on the dynamics of interpersonal risk communication. In this extreme arena, communicating risk goes far beyond tracking objective environmental threats (Hazard). Immonen et al., (2022) identified that risk in outdoor sports emerges from the interface between human perception and environmental demands. Within this interface, experienced endurance runners often exhibit a substantial "risk perception gap" between objective trail dangers and subjective cognitive confidence, frequently trivializing safety regulations due to entrenched athletic egos Berger et al., (2024). If left unmanaged, this gap induces defensive denial or compliance failures during acute field crises Gu et al., (2026).Therefore, the core operational hurdle was managing the runner's Outrage, which in Peter Sandman's Risk Communication Framework manifests as the intense emotional resistance, athletic pride, and defensive denial of competitive runners who fiercely resist being pulled off the course.

In the high-stakes reality of extreme endurance sports, when an athlete's physical capacity drops into a dangerous zone but their internal motivation remains blindingly high, severe cognitive friction occurs. According to Peter Sandman's framework, risk is not just the presence of a physical threat, but how that threat is perceived and emotionally processed:

$$\text{RISK} = \text{HAZARD} + \text{OUTRAGE}$$

If the field crew issues a cold, top-down authoritative command to a depleted runner, it acts as an emotional trigger, driving the runner's *Outrage* to a peak and causing them to completely reject the safety warning. To navigate this field reality without generating group friction, the Sobat Tektok (SOTEK) field crews actively engineered an empirical, bottom-up risk communication strategy focused on mitigating *Outrage* through real-time interpersonal adjustments on the trail:

De-escalating Outrage through Horizontal Risk Messaging (*Sharing Control*) When sweepers encounter an endangered runner, they deliberately avoid acting like track police or rigid evaluators. Instead, they frame their risk communication within a horizontal peer-to-peer tone. They match the runner's physical pace, walk alongside them, offer physical comfort (such as hot tea or high-calorie snacks), and speak in an empathetic manner. This non-verbal and verbal alignment validates the runner's effort first, effectively lowering their emotional defenses and reducing their psychological resistance to incoming risk warnings.

Transforming Abstract Hazard into Shared Verbal Realities *(Acknowledging the Hazard).* Rather than shouting warning metrics on the move, the real communication shift occurs during face-to-face dialogues at designated physical aid stations, specifically the

Water Stations (WS) at *Lapangan Patak Banteng* (KM 19) and *Kedai Kunang*-Kunang (KM 53). Here, the field crew presents the hard, unvarnished field parameters in a calm, consultative manner. They contrast the runner's visible physical markers (such as shivering, staggering, or missing the strict cut-off times) with the brutal reality of the incoming terrain such as explicitly reminding them of the technical, vertical night climbs awaiting them on Mount Bismo. This dialogue shifts the runner's perception from an abstract concept of safety to a concrete, undeniable reality.

Coerced Compliance vs. Communicative Consent (*Voluntary DNF*) Recognizing Sandman's principle that risks accepted voluntarily generate far less emotional backlash than those imposed by an outside authority, the sweepers use a persuasive linguistic style to guide the athlete to make the decision themselves. They frame the withdrawal not as an administrative penalty or a failure, but as a tactical, self-preserving choice to live and run another day.

The raw field reality of this interpersonal risk communication is captured vividly in the testimony of Informant 3, a core member of the community's sweeper crew:

> *When we encountered runners who were severely exhausted on the trail leading to the summit of Mount Sindoro, we could not simply command them to stop in a harsh manner. Instead, we positioned ourselves as fellow companions on the journey. We engaged them in casual dialogue, checked their remaining water or logistical supplies, and discussed whether they intended to proceed to Mount Sumbing while strictly sticking to the established time estimation parameters.* (Interview with Informant 3, May 2026).

Table 1. Field Risk Communication Modality Day 1 & Day 2 Cycle

Strategy Components	Identify the Strategy	Virtual Phase (Digital Mobilization)
Communication Approach	Data-driven technical dissemination and automated metric broad-casting via closed mobile networks.	
Message	Strict reminders regarding the standardization of 20 mandatory logistics items and cutoff metrics.	
Media Channels	Private community WhatsApp broadcast groups and smart application alerts.	

Source: Researcher Data Analysis (2026)

This grounded approach to risk communication proved highly effective during the critical night sectors and severe weather transitions. Nuuttila et al., (2025) demonstrated that prolonged physical exertion exceeding normal biological durations induces a severe degradation in runner durability, characterized by a significant drop in lactate threshold speed due to the accumulation of neuromuscular fatigue. This extreme physiological decline correlates with a loss of neuromotor control, bodily equilibrium, and locomotion coordination on highly irregular trail matrices, as identified by Vincent et al., (2022).

To counter this non-technical risk of panic during equipment deficiencies or atmospheric drops, the field sweepers deployed an adaptive, non-coercive style of communication. Guruh Irwansyah, navigating the trailing sections as the full-route sweeper, observed that non-technical vulnerabilities often surface when exhausted runners experience gear deficiencies in high-stress zones (Interview, May 22, 2026). Guruh Irwansyah explained that:

> *During the transition into the night segments between Mount Pakuwaja and Mount Bismo, technical gear deficiencies became apparent, as several trailing participants lacked crucial lighting apparatuses like headlamps or proper soft flasks. Despite facing extreme exhaustion and falling behind schedule, the runners remained remarkably calm and did not panic because the sweeper team provided a constant, reassuring physical presence. We mitigated the non-technical risk of isolation by constantly monitoring group numbers and staying by their side. Even when atmospheric conditions deteriorated above station four on Mount Sindoro, bringing heavy fog and high winds, our supportive communication allowed runners to accurately assess their physical boundaries and voluntarily choose to DNF rather than recklessly forcing their way forward."* (Interview with Guruh Irwansyah, May 22, 2026).

This adaptive posture was driven by a shared control model between organizational leaders and field sweepers. Ali et al., (2022) explained that implementing a flexible, decentralized span of control significantly enhances operational efficiency in high-risk zones, preventing communication bottlenecks during emergency transitions. Maintaining cognitive stability under macro-climatic distress requires advanced psychological adaptation mechanisms, where strong emotional regulation, safety motivation, and acute stress resistance dictate an athlete's decision-making efficacy under high-pressure environmental uncertainty Safoev (2025). Rather than executing an authoritarian, top-down command structure, the management utilized decentralized peer support networks, allowing democratic dialogue to dissolve psychological tension and promote rational decision-making under stress, as argued by Marlina et al., (2026).

The empirical evidence of this successful outrage management is reflected in the participant survival numbers. Out of 51 initial athletes who started the 7 Summit grid, only 38 proceeded to Day 2 after facing the brutal technicalities of Day 1 (Mounts Kembang, Prau, Pakuwaja, Sikunir, and Bismo). Eventually, following the sudden storm above Station 4 on Mount Sindoro, the field crew's collaborative communication triggered a rational, mass DNF sequence at Basecamp Kledung before attempting Mount Sumbing. As a result, only 15 runners successfully completed the entire 7 Summit grid.

Theoretically, the reality of SOTEK's field operations proves that in informal, highly competitive sports cultures, managing emotional *Outrage* through horizontal interpersonal communication is vastly superior to top-down institutional mandates for enforcing safety compliance. Ismail et al., (2024) emphasized that internalizing a collaborative safety culture through dynamic two-way communication functions as an organization's primary defense against catastrophic incidents in high-risk environments. It was precisely this tactical, real-world communication effort that allowed the community to navigate an extreme multi-peak endurance event and conclude the 7 Summit Wonosobo 2025 with zero major injuries and an absolute *zero casualty* record.

c. *Community-Based Event Risk Communication Dynamics*

The operational governance of the 7 Summit Wonosobo 2025 relies heavily on a structured, chronological division of risk communication, moving dynamically from digital pre-event conditioning to adaptive mid-event field interactions. In extreme sports subcultures, safety compliance cannot be achieved through sudden coercion; it must be engineered as a continuous communicative process. SOTEK's operational reality demonstrates that community-based event risk communication functions as a dual-phase mechanism: a centralized pre-event phase designed to reshape the athlete's risk perception, followed by a decentralized mid-event phase focused on real-time dialogue and behavioral alignment. This chronological continuum ensures that abstract technical hazard parameters are successfully translated into voluntary, self-preserving safety choices on the trail.

The pre-event phase serves as a proactive educational platform where the community leadership systematically deconstructs the athletes' inherent cognitive distortions and optimism bias through absolute data transparency. Utilizing a multi-layered digital information network, SOTEK begins broadcasting long-term atmospheric and logistical warnings across public channels one month prior, transitioning into highly targeted technical data streams inside internal communication networks as the event draws near. Boy Aldar, acting as an organic communication orchestrator, noted that the structural design of the Technical Briefing (TB) intentionally prioritized objective geographic realities over motivational or psychological assurances, ensuring that participants developed a sober comprehension of the physical workload. Boy Aldar explained that:

> *During the execution of the Technical Briefing, we made a strategic decision to focus almost entirely on the technical parameters of the event. We presented comprehensive breakdowns regarding every type of terrain, expected microclimate transitions, and realistic assessments of physical fatigue. The primary objective was to compel the runners to listen to their own bodies rather than their competitive egos. By exposing them to empirical data rather than abstract warnings, we ensured that the participants entered the trail with an accurate understanding of the survival boundaries required for high-altitude environments.* (Interview Boy Aldar, May 2026).

This pre-event conditioning establishes a baseline of safety literacy that directly influences real-time behavioral adjustments once the runners transition into the mid-event phase on the trail. This process complies with the conceptual framework of risk communication proposed by Peter Sandman, where structural transparency regarding high-hazard technical profiles simultaneously defuses irrational public outrage, psychological resistance, or false confidence before field deployment Sandman, (2012). Furthermore, grounding the pre-event phase in detailed topographic metrics counteracts the inherent limitations of standard GPS tracking instruments. Due to the complex fractal geography of high-altitude volcanic terrains, standard digital spatial resolutions often undergo severe distortions, underestimating a route's cumulative vertical ascent by up to 32% and concealing the actual geometric workload from the athlete Sanchez et al., (2025). Hence, SOTEK's explicit pre-race visualization acts as a critical cognitive correction, altering the runner's internal hazard appraisal before they set foot on the mountain.

During the mid-event execution, communication shifts from a centralized, top-down data broadcast into a decentralized, two-way interaction network that connects the decision-making board, the field monitoring teams, and the athletes. In this highly volatile environment, the role of opinion leaders and active field sweepers becomes paramount in maintaining communication continuity across disparate mountain zones. Anwar Jaeni emphasized that mid-event coordination relies on a continuous loop of real-time updates carried out through High-Frequency radio transceivers (HT) and digital messaging, allowing central management to accurately track the progression of the trailing pack and pre-empt logistical bottlenecks. Anwar Jaeni stated that:

> *Our mid-event interaction model is structurally designed to be a two-way dialogue, where we actively solicit continuous feedback and input from the runners on the trail. For instance, when navigating high-traffic or time-sensitive sectors like Mount Kembang and Mount Pakuwaja, we open discussions regarding operational alternatives, such as permitting participants to utilize localized motorcycle transport to Pos 1 to optimize their position against the strict Checkpoint (COP) windows. This interactive approach ensures that when a runner is running dangerously close to the Cut-Off Time, we can collaboratively determine the safest course of action without triggering panic or erratic behavior.*(Interview Anwar Jaeni, May 2026).

This operational adjustability during high-stress transitions directly maximizes collective safety parameters. From a sports-science standpoint, prolonged high-intensity vertical movement rapidly degrades an athlete's biological durability, yielding a severe drop in lactate threshold velocity brought on by systemic neuromuscular fatigue Nuuttila et al., (2025). This degradation impairs motor control and bodily equilibrium, vastly multiplying the probability of acute musculoskeletal trauma on uneven surfaces Vincent et al., (2022). By introducing tactical mid-event dialogue and permitting adaptive interventions such as localized transport to Pos 1 during the opening phases the management actively buffers the athletes' physiological workload. This strategy directly leverages real-time athletic monitoring principles, where evaluating pacing variability and velocity during the early third of an ultra-endurance event demonstrates a predictive accuracy above 95% regarding a runner's ultimate survival rate and finishing time Gutiérrez et al., (2025).

This fluid integration of pre-race data visualization and adaptive mid-race field monitoring effectively transforms how athletes internalize regulatory constraints. Rather than viewing Cut-Off Times (COT) and mandatory safety gear as restrictive external penalties, the participants recognize them as structural life-saving parameters. This structural alignment is heavily evident during the Day 1 cycle, which encompasses a dense circular loop of five distinct volcanic peaks: Mount Kembang, Mount Prau, Mount Pakuwaja, Mount Sikunir, and Mount Bismo. As twilight transitioned into the perilous night sector of Mount Bismo, the field sweepers successfully deployed close-proximity, face-to-face communication to counter the non-technical risks of isolation and cognitive panic amidst a technical terrain filled with exposed root networks, precipitous drops, and steep microclimatic thermal plunges.

Because over 70% of running-related musculoskeletal injuries are chronic overuse conditions caused by athletes dangerously running through severe fatigue without structural kinematic control, the sweepers' unmediated, humanistic presence allowed trailing runners to execute cognitive reappraisal. This supportive communication style enabled exhausted athletes to voluntarily downregulate their competitive egos and

execute rational, self-protective DNF choices at the Bismo basecamp rather than exposing themselves to severe nocturnal hypothermia (Kinanti & Darmawanti, 2022).

The efficacy of this chronological communication framework faced its ultimate systemic crisis on Day 2 during the ascent of Mount Sindoro via Kledung and Mount Sumbing via Garung. As the trailing group advanced past Station 4 (Watu Tatah) on Mount Sindoro, a severe macro-climatic storm struck, bringing gale-force winds, thick fog, and an immediate loss of visual orientation. In this critical zone, the competence-based trust beliefs established during the pre-event phase prevented mass psychological panic. The operational success of this peer-driven approach relies entirely on the management of the trust asymmetry principle, where Conchie and Burns Conchie & Burns (2008)demonstrated that an organization's honest, unvarnished disclosure of operational hazards from the outset fundamentally fosters internal trust and compliance intent among group members. Following the field sweeper's directive to abort the summit and execute an immediate retreat, the athletes exhibited complete structural compliance. Guruh Irwansyah observed that this shared safety culture manifests directly in the cooperative behavior of the trailing runners, who willingly choose to forfeit their competitive ambitions when confronted with overwhelming physiological and environmental boundaries. Guruh Irwansyah noted:

> *I encountered several runners in the back of the pack who were showing early signs of extreme fatigue and lack of technical gear, such as missing headlamps or insufficient soft flasks, especially after navigating Mount Kembang and Prau. When they realized they were lagging far behind, my primary approach was to remain calm, walk directly alongside them, and continuously track their numbers as we transitioned through the night segments. We never aggressively force a participant to drop out; instead, we use a compassionate peer-to-peer approach, reminding them to listen to their own bodies. I would tell them: 'If you feel strong enough to continue, I will walk every step of the way with you, but if your body says no, it is perfectly fine to stop.* (Interview with Guruh Irwansyah, May 22, 2026).

The absence of stubborn resistance or hostile communication from athletes facing severe fatigue on the upper slopes of Mount Sindoro proves that the psychological foundation laid during the pre-event briefings successfully carried over into the high-stress moments of the live race. This democratic, peer-supported interaction model allowed the group to absorb the trauma of post-storm exhaustion, culminating in a rational mass DNF sequence at Basecamp Kledung where only 15 out of the initial 51 athletes proceeded to complete the final grid on Mount Sumbing.

This structural layout exemplifies a highly effective shared control system, where distributing decision-making authority adaptively between centralized directors and decentralized field crews reduces the cognitive load on a single entity and prevents catastrophic errors in the trailing segments (Sarabia et al., 2026). Ultimately, risk acceptance and safety behavior in extreme environments are fundamentally shaped by close social ties and shared group meanings within the community network, which align individual peril boundaries and unify safety compliance (Vande and Inglés, 2021). By fostering a culture-centered, two-way communication flow, SOTEK successfully built an organic group safety culture that completely mitigated physical trauma, concluding the extreme marathon with an impeccable zero-casualty and absolute zero-accident record (Cadena Echeverría et al., 2025; Ismail et al., 2024).

CONCLUSION

This study concludes that the systemic gap between formal safety standards and individual compliance in extreme endurance sports can be bridged through a structured, multi-phased risk communication framework. By integrating Peter Sandman's Risk Communication Theory and the Social Amplification of Risk Framework (SARF), this research demonstrates that managing extreme outdoor events requires a careful balance between communicating objective technical hazards and managing participants' subjective cognitive biases. SOTEK's operational model proves that shifting from centralized digital risk amplification during the pre-event phase to decentralized, peer-to-peer dialogue during the live event effectively normalizes safety compliance. By flattening the communication hierarchy, the community successfully deconstructs the athletes' dangerous optimism bias, turning regulatory constraints into voluntary, self-preserving decisions.

The theoretical contribution lies in expanding the concept of informal sports governance. It proves that horizontal, community-based risk communication can achieve absolute structural safety where rigid, institutional top-down mandates often face resistance. Interpersonal trust and shared group meanings within a subculture function as powerful tools for risk mitigation. Practically, this study offers a scalable blueprint for independent sports organizers. It highlights that integrating transparent technical data with supportive, non-coercive field messaging can eliminate physical trauma and achieve zero-casualty parameters in highly volatile environments without losing the group's organic identity.

A key limitation is that this research relies on a single-community case study centered on the Sobat Tektok (SOTEK) network and a single event, which limits the immediate generalizability of the findings to different athletic subcultures. Additionally, the qualitative approach used a small number of key informants, which captures deep operational insights but may not fully represent the diverse individual risk perceptions of all participating athletes in wider endurance sports contexts.

To address these limitations, future research should expand into several strategic directions. Scholars are encouraged to conduct comparative analyses across multiple independent trail-running communities to understand how different organic group cultures manage risk communication. Furthermore, deploying quantitative or mixed-method research designs will be highly beneficial to measure the statistical effectiveness of specific digital risk channels on athlete compliance rates. Finally, investigating the expanding role of specialized digital technology, real-time tracking applications, and mobile networks will provide deeper insights into how modern technology shapes risk messaging within informal extreme sports governance.

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