

DE GRUYTER  
OPEN

## Understanding Trail Runners' Activity on Online Community Forums: An Inductive Analysis of Discussion Topics

by

Nadège Rochat<sup>1</sup>, Denis Hauw<sup>2</sup>, Gaëlle Gür<sup>3</sup>, Ludovic Seifert<sup>4</sup>

Recreational trail runners often participate in online community forums where they can freely read posted messages, join discussions and/or introduce new discussion topics. This tool can enhance learning as runners connect with other trail runners and reflect on how they can better organize their own practice. Studying forum activity would provide greater insight into the relationship between field practice and dedicated forums. The aim of this study was therefore to detect the topics discussed online by trail runners in order to understand how they collectively look for solutions that help them adapt to issues that emerge during actual practice. The discussion topics ( $n = 171$ ) on the forum hosted by the Raidlight brand were examined using inductive content analysis, which distinguished two general dimensions. The first dimension was training and had four first-order themes (i.e., "specific trail running sessions", "complementary trail running sessions", "training plans" and "specific questions about races") grouped into two second-order themes (i.e., "training session contents" and "structure and schedule"). The second dimension was health and had seven first-order themes (i.e., "tendinitis", "muscle issues", "foot issues", "sprains and fractures", "pain", "physiology" and "substances and practitioners") grouped into two second-order themes (i.e., "pain and injury" and "prevention"). The results indicate that the issues that trail runners discuss on forums are significant and that the successions of questions and solutions are a fruitful means for building, enriching and adjusting their activity as they cope with constraints. As a practical consequence, suggestions for improving such online platforms are made.

**Key words:** trail running, forums, training, health, activity, communities of practice.

### Introduction

Trail running is an outdoor endurance activity (e.g., mountains, desert, forests, etc.) covering a range of distances and elevation changes. It requires considerable physical and energetic resources, and runners must be able to adapt to environmental constraints (e.g., meteorological changes, terrain), the emergence of extreme fatigue (Hurdiel et al., 2015), physical pain (Simpson et al., 2014) and other stressors such as cramps, injuries, gastrointestinal problems and thoughts about quitting (Holt et al., 2014). In addition to the racing context, Simpson et al. (2014) reported that integrating training sessions

into everyday life was challenging for non-professional runners, who had to make compromises in their schedules to find time for their training sessions. Taken together, these constraints mean that runners need to find those adaptations that will empower them to finish a trail race (Antonini Philippe et al., 2016; Hauw et al., 2017; Rochat et al., 2017). One way of doing so might be through discussions with peers, as suggested by previous findings about information exchange within athletes communities (Kimmerle et al., 2012). For example, Simpson et al. (2014) showed that runners often relied on the running

<sup>1</sup> - Company Raidlight-Vertical SAS Outdoor Lab, Saint-Pierre-de-Chartreuse, France ; Institute of Sport Sciences of University of Lausanne, Lausanne Switzerland; Normandie Univ, UNIROUEN, CETAPS, Rouen, France

<sup>2</sup> - Institute of Sport Sciences of University of Lausanne, Lausanne, Switzerland.

<sup>3</sup> - Institute of Sport Sciences of University of Lausanne, Lausanne, Switzerland.

<sup>4</sup> - Normandie Univ, UNIROUEN, CETAPS, Rouen, France

community for advice on effective training. These authors, however, also noted an emerging sense of community specific to trail runners, who perceived their fellow competitors as members of an exclusive club able to take on a challenge that few would be willing to endure. Others have identified the heterogeneity within this community, with wide differences in the running background, level and motivation for trail running (Knobé, 2007; Simpson et al., 2014) giving rise to a wide diversity of performances, practice modalities (distances, types of race), training methods, and use of gear. Trail runners thus bring various and singular experiences to their community, but share common concerns regarding adaptation issues and a jargon specific to their sport.

The jargon is a shared repertoire used to convey personal experiences that serve to reify and contribute to a community of practice: a group of people who share common concerns, problems or a passion and wish to enhance their knowledge and expertise by interacting with others (Wenger, 1999). The online forum is thus an artifact that enables mutual engagement in a community. According to the Wenger's model of the community of practice, learning is situated and emerges from interactions among community members and with the world at large by tuning relationships, sharing experiences and negotiating meaning and ways of understanding the world (Wenger, 1999). Lave and Wenger (1991) characterized learning as a process of "legitimate peripheral participation" in communities of practice in which learning was an integral constituent of an engagement in a social practice. Therefore, a community of practice offers a window on how experience is conveyed among members and provides insight into how informal learning emerges from the community interactions (Culver and Trudel, 2006; Lave and Wenger, 1991). In this perspective, the notion of virtual communities of practice is meaningful as they enable to seek for others' experience via a social media on the Internet to learn from each other (Kimmerle et al., 2013). In the domain of teaching, for example, Babinski et al. (2001) showed that teachers posted their ongoing practice-based issues and concerns, with classroom management being a notable concern. Peers then helped them to define or reframe the

problem and elaborate a plan of action for the future. We suggest that dedicated forums display a representative fraction of trail runners' concerns and difficulties of adaptation. By seeking online advice from this virtual community of practice, runners use forums to learn about adaptations that will enlarge their range of activity and better prepare them to cope with constraints.

Virtual communities of practice are also present in the social media and research can provide observatory platform for personal experience reports. Communities of diabetic patients share personal experience on Facebook, with patients raising questions and receiving direct feedback from other diabetic people. These communities therefore provide two services: (1) information-sharing about diabetes management, and (2) interpersonal support and a sense of belonging to a community that understands the struggles of the diabetic patient (Greene et al., 2011). In the same vein, analyses of Twitter have provided greater insight into how antibiotics information is disseminated (Scanfeld et al., 2010) or fan-athlete interactions (Pegoraro, 2010). In addition, other virtual places have been created to mediate communications within communities of practice: for example, athletes with doping concerns can access a service called "Ecoute Dopage", a hotline providing information and advice about prohibited substances and doping ("Ecoute Dopage", 2017). An analysis of the calls to this service identified the most frequent motives for using such substances (Bilard et al., 2011) and provided the researchers with valuable information on the individual experiences and behaviors related to doping. It thus provided the grounds for prevention programs focused on education. Hauw (2016) indeed suggested that platforms like websites and forums had informational and educational roles in doping prevention by (1) communicating on anti-doping education and prevention programs in line with athletes' meaningful concerns and (2) creating and maintaining a global anti-doping culture.

In light of the above-mentioned literature, a community of practice in trail running can be seen as encompassing a multiplicity of individual experiences that all find common ground on discussion forums. In parallel to the practical level, a sense of community extends to the Internet thanks to dedicated spaces like websites

or forums, sometimes managed by the brands and companies specialized in various aspects of trail running (e.g., training, equipment, races, nutrition, etc.). Thus, reflecting this phenomenon of a community of practice that embeds the experience of trail running in its field practice, social networks have provided a relevant platform for the modes of human activity (knowledge exchange, debates, experience sharing, advice seeking) over the last few years and might help better understand the practice modalities of trail running and its inherent demands of adaptation. The extension from field practice to online activity opens opportunities to deepen our understanding of a given activity and ways of developing. In case of trail running, the training culture is still quite fragile, probably because of its recent popularity, and runners tend to train autonomously (Krouse et al., 2011). Yet this autonomy encourages the use of online support as a way to construct "self-made training". Moreover, forum use is a form of communication for trail runners that has not yet been studied, although it may provide an opportunity to extend the face-to-face interactions of races or training with others to a much wider geographical scale. Not only does it provide a means for developing the productive part of trail runners' activity (e.g., performance, problem management), but it also allows the emergence of a virtual brand community, a group of people that share an interest in a specific brand and practice, solving the geographic issues and bringing forth a sense of community that might help develop the trail runners' activity (Sicilia and Palazón, 2008).

Palmer and Thompson (2007) suggested that the Internet was a critical medium through which members of a community of practice maintained their identity. The authors identified a "sense of sameness" that emerged on these community websites and facilitated the exchange of advice and information. Indeed, the community forum is a tool for easily collecting a considerable amount of information compared with the usual research tools, such as interviews (Bruchez et al., 2009). Another advantage is that the researcher does not intervene and thus does not disturb the activity unfolding within the community. Beaudouin and Velkovska (1999) described the discussion forum as a tool for asynchronous interactions via publically posted

messages. According to these authors, a forum has memory and any discussion can be read at any time. Moreover, participants can take part in discussions and make replies to other users: in this sense, it is a participatory tool. Yet they can also simply follow the discussions without taking part in them. Marcoccia (2001) qualified these forums as numeric spaces that allowed users to collectively manage intellectual activities, going from simple chats to complex processes of problem-solving or help with decision-making (Marcoccia, 2001). Staii et al. (2010) studied forums about eating disorders and observed that these forums were "for bringing or seeking information or moral support". According to these researchers, discussion forums are a public asynchronous exchange space, allowing users to ask about and discuss issues that require replies and solutions or to look for help with decisions and moral support. Moreover, the collective characteristics (an unlimited number of people can take part in the discussions and the discussions are on public display) of this tool lead to the emergence of common knowledge: participation in online discussions helps collectively build a referential (Akrich and Méadel, 2002). These discussions can be considered as (1) a virtual meeting point to foster a sense of community (Babinski et al., 2001), (2) a marketing tool for developing a consumer loyalty program in an environment where the brand is present and can monitor experience sharing (Rowley et al., 2007; Sicilia and Palazón, 2008), and (3) a tool for product innovation thanks to ongoing dialog between a designer and community members (Füller et al., 2007).

In forums, people have a voice in constructing shared knowledge and comparing personal experience with scientific knowledge (Sudau et al., 2004). In the medical domain, discussions and debates about medical knowledge have been analyzed and it was indicated that forum users appropriated, challenged or contested medical knowledge by comparing it with their own experience (Akrich and Méadel, 2002; Broca and Koster, 2012). This has given rise to "expert patients" (Sudau et al., 2004), who sometimes explicitly express their opposition to the treatment proposed by the doctors or health professionals of medical institutions. The authors identified a strong need

to exchange advice and seek support in coping with the daily life difficulties caused by illness and treatment side effects. A similar phenomenon has also been observed in bodybuilding: non-professional bodybuilders become "lay experts" and compare training procedures on dedicated forums, where they also debate scientific knowledge that sometimes contrasts with their personal experiences (Delalandre, 2014). In addition, Kimmerle et al. (2012) showed that athletes' dissatisfaction with biomedical treatments encouraged them to seek advice on forums to find alternative solutions to their problems without health professionals.

Indeed, these above-mentioned phenomena of experience sharing and debate might be encouraged by the structural characteristics of forums, which facilitate this kind of activity within the virtual community of practice. Bruchez et al. (2009) analyzed contraception knowledge among the users of a contraception forum and defined two characteristics that seemed specific to forums: anonymity through virtual identities and the public nature of the exchanges, which allowed any user to follow and participate in the discussion, often prompting the evolution and transformation of the theme. Moreover, the temporal organization has two notable characteristics: stretched time (Gettliffe-Grant, 2003) and asynchronicity, meaning that users can post and reply to messages at any time, therefore stretching the temporality of the discussion (Marcoccia, 2004; Patoine, 2006). Therefore, users' development of experience and knowledge from these interactions seems to be an inherent characteristic of the activity that unfolds on forums.

Activity has been conceived of as inextricably embedded, embodied, extended and enacted, which means that it cannot be analyzed independently from its context (Rowlands, 2010). From this perspective, we postulate that the need for an online tool like forums emerges from a significant event during actual trail running that runners are unable to resolve alone or with the help of close friends and relatives. Forums can be thought of as ongoing discussions with specific properties (public space, asynchronicity, forum memory) that give rise to a singular exchange space in which common knowledge emerges, as

Marcoccia (2001) explained: forum are sources for collective intellectual activities like simple discussions or complex processes of problem-solving or help with decision-making. These observations reinforce the hypothesis that trail runners use forums with a purpose, a precise need for specific information or moral support (Staii et al., 2010). In the same vein, Kimmerle et al. (2012) identified two main types of forum users: the "help seekers" and "helpers" who mainly used their personal experience and anecdotes to share their knowledge.

The shared knowledge that emerges from these community interactions can complete and transform the user's experience. This transformation is generated by the circulation in the forums of cybernetic experience and the experience of practical action. It often results in productive effects on performance and a strengthened sense of community. Balkhi et al. (2014) investigated the motivations for using forums of the parents of children with type 1 diabetes. Their results suggested that the parents primarily sought to learn more about diabetes, gain social support and lower their fears about hypoglycemia in everyday life. Yet when patients share their experiences, the risk of exchanging medical information that is inaccurate and/or misleading is greater (Malik and Coulson, 2008). Interestingly, a study about drug use and pregnancy on online chats showed that the discussion contents (i.e., the information shared by the forum users) could be potentially dangerous for pregnant women because of the unreliability of the information (Palosse-Cantaloube et al., 2014). However, the present study does not intend to assess the quality of the information shared, but instead aims to better understand which topics related to actual trail running can offer directions for further areas of investigation in the use of online tools in the sports sciences.

To sum up, the literature on trail running highlights the inherent constraints of this sport, and forum studies have indicated that online discussions concern unsolved adaptation issues and common solutions. We thus postulate that the forum discussion is a relevant tool for gaining further insight into how issues emerge during the unfolding activity of trail running. It completes our knowledge on this sport by providing

additional insight into how runners collectively seek and find solutions to overcome problems. Therefore, the aim of this study was to examine the fraction of trail runners' activity that unfolded on dedicated forums in order to identify the major themes that emerged and were related to unsolved practical issues of adaptation. As trail running is a recent practice, we hypothesized that specialized forums would support learning and the development of the runners' range of possible activities needed to adapt to the extreme constraints of field practice. We expected to identify meaningful concerns rooted in their actual practice that would emerge at this communication level, giving rise to the online discussions.

## Methods

### *Participants*

Data were extracted from the community forum hosted by the Raidlight brand. This open-access forum (i.e., anyone can read the posted messages, even without an account) had several subsections (e.g., products and gear, website problems, race calendars, etc.). For the present analysis, 171 discussions on the Raidlight forum were collected from the 1<sup>st</sup> April, 2014, to the 2<sup>nd</sup> July, 2015, within the forum subsection "Training and health". The information collected about each user was as follows: first name, the first letter of the last name, gender, age, department and country (users mostly came from France). In total, 155 users opened and/or took part in a discussion during this period and 95% were men.

### *Data collection*

All the data collected from the discussion threads were anonymized, as were the usernames of message authors labeled with their initials. When they opened accounts on the website, the users were informed that the content posted on the forum might be used for research purposes by the Research & Development department of the Raidlight Company.

The discussion contents were extracted and transcribed in a summary table that displayed the first introductory message as well as the following messages (i.e., the replies) in chronological order.

### *Procedures*

To determine what types of issues were discussed, 171 introductory messages were

retrieved and copied into a file, then grouped into categories based on the message contents. Then, data coding followed the process of inductive content analysis (Biddle et al., 2001); the salient statements of the introductory messages for each discussion were considered to be the raw data themes, and their thematic similarities allowed us to identify first-order themes to reflect the general content of the raw data. An introductory message was an initiating post opening a new discussion topic (Babinski et al., 2001). It provided a field for others to comment on or respond to. As in previous forum analyses (Babinski et al., 2001; Dorey and Guastavino, 2011), we began by analyzing the content of the initiating messages. When two introductory messages were identical, they were grouped together in the raw data. Then, first-order themes were grouped into more general themes, called second-order themes, which enabled us to identify general dimensions. Several measures were taken to ensure the trustworthiness of the data and analysis. Two researchers with experience in qualitative research in the sport sciences coded the data and, as a complement, were supervised by a third experienced researcher. The additional messages of the thread were only used to provide a full context of the discussion when needed (Dorey and Guastavino, 2011).

### *Ethical considerations*

The protocol was approved by the ethics committees of both the University of Rouen and the University of Lausanne (joint agreement) and followed the guidelines of the Declaration of Helsinki. The data collection complied with the terms and services of the Raidlight forum.

## Results

Two general dimensions were identified: training and health. The results for each dimension are presented successively.

### *Training*

This general dimension comprised 104 raw data themes (60.81%) distributed into four first-order themes and two second-order themes (Figure 1).

The first first-order theme was called "specific trail running sessions" and comprised 30 raw data themes. The themes referred to discussions about improving physical and technical skills: running speed, endurance

capabilities, and efficiency on hilly terrain, with various training exercises (e.g., interval training, downhill training, increasing maximal aerobic speed). For example, runners shared a hyperlink to an article with advice about downhill running. Another frequent mode of dealing with a topic was asking others about their practices: *"What do you do to improve your maximal aerobic speed? I need ideas for my sessions"*. Questions and suggestions about high intensity interval training (HIIT) constituted 30% of the raw data theme within this first-order theme (e.g., *"I'm looking for a new type of HIIT, any ideas?"*).

The second first-order theme was called "complementary training sessions" and referred to general physical preparation and the varieties of training modalities with sports alternatives (e.g., cycling, slackline, elliptical trainer) to improve physical skills useful for trail running even though not necessarily implicated in running: *"I'm looking for proprioception exercises"; "I've found new strength exercises for core-training"*. These two first-order themes formed the second-order theme: "content of the training sessions", which embedded the dimensions that constituted the actual training practice in the field. In other words, this second-order theme encompassed what runners actually and physically *did* when training.

The third first-order theme was called "training plans" and referred to training plans and the temporal organization of training sessions: *"Here is how I prepare and structure my practice"* or *"How should I organize my training sessions between two races?"*. It also referred to the management of rest time (e.g., *"When should I take a break and for how long?"*) to achieve the most of training effects (i.e., increasing volume, tapering, not regressing). There were also questions about organizing training sessions around personal and professional constraints and coming back to training after a temporary break.

The fourth first-order theme was called "specific questions about races" and referred to specific questions about race formats and targeted season goals. The discussions consisted of questions and answers about specific training plans for well-known trail running events (e.g., *"I'm looking for a training plan specific for the Ultra Trail du Mont-Blanc"*), training plans for a given distance and/or subdiscipline of trail running:

ultra-races of more than 80 km and the vertical kilometer consisting of climbing a 1000 m hill of positive elevation over 3-4 km.

These two first-order themes formed the other second-order theme i.e., "structure and schedule" of the training dimension embedding the theme of the temporal organization of training sessions. Lastly, the two second-order themes "content of the training sessions" and "structure and schedule" gave rise to the general "training" dimension.

### Health

This general dimension comprised 67 raw data themes (39.18%) distributed into seven first-order themes and two second-order themes (Figure 2).

The first first-order theme was called "tendinitis" and comprised six raw data themes, such as painful tendons in the lower limbs; interestingly, iliotibial band syndrome was discussed three times.

The second first-order theme was called "muscle issues" and comprised seven raw data themes related to muscle pain (i.e., cramps, contractures, sore muscles), muscle disease (i.e., myoclonia, aponeurosis), devices: *"Is electostimulation useful or superfluous?"*, or practical applications: *"Looking for appropriate stretching exercises: I need advice"*.

The third first-order theme was called "foot issues" and comprised eight raw data themes related to foot pain (e.g., *"Do you have any idea about how to relieve plantar pain?"*), injuries and deformations (malleolus, quintus varus), preservation and injury prevention (e.g., *"How can I protect my feet during a race?"*), as well as material (shoes, orthotics).

The fourth first-order theme was called "sprains and fractures" and comprised seven raw data themes such as periostitis and fatigue fractures, and one forum user reported a suspicion of this kind of injury: *"Hello everyone, I'm looking for people who've already had metatarsal fatigue fractures? I suspect I have one after last weekend's race"*. Four other raw data themes related to ankle sprains, especially when starting running again, were discussed: *"Should I wear an ankle brace?"*; *"How much time should I rest for a complete recovery?"*.

| Raw Data Themes                                     | 1st order                                   | 2nd order                                    | General dimension     |
|---|---|--|-----------------------|
| Maximal aerobic speed (4)                           |   |  |                       |
| Endurance (5)                                       |   |  |                       |
| Heart frequency (2)                                 |   |  |                       |
| Running backwards                                   |   |  |                       |
| Interval training and HIIT (9)                      |   |  |                       |
| Uphill training (3)                                 | <b>Specific trail running sessions (30)</b> |  |                       |
| Physical predisposition                             |   |  |                       |
| Plyometrics (2)                                     |   |  |                       |
| Downhill training (2)                               |   |  |                       |
| Warm-up   |   |  |                       |
| Internal aspects of training                        |   | <b>Content of the training sessions (49)</b> |                       |
| Effort tests  |   |  |                       |
| Core training (2)                                   |   |  |                       |
| Doing other sports (3)                              |   |  |                       |
| Elliptical trainers (2)                             | <b>Complementary training sessions (19)</b> |  |                       |
| Cross-training (2)                                  |   |  |                       |
| Bike and run or run and bike?                       |   |  |                       |
| Proprioception                                      |   |  | <b>Training (104)</b> |
| Slackline   |   |  |                       |
| Take a break (7)                                    |   |  |                       |
| How to structure training sessions (6)              |   |  |                       |
| Personal coaching and clubs (5)                     |   |  |                       |
| Increasing training volume                          |   |  |                       |
| Are you a trail running addict?                     | <b>Training plans (32)</b>                  |  |                       |
| Not regressing (2)                                  |   |  |                       |
| Training sessions between two races (2)             |   |  |                       |
| Tapering (2)  |   |  |                       |
| Return to training (4)                              |   | <b>Structure and schedule (55)</b>           |                       |
| Advice for beginners                                |   |  |                       |
| Training plans for specific races and distances (5) |   |  |                       |
| Training plan for 75 km trail races (2)             |   |  |                       |
| Doing longer distances                              | <b>Specific questions about races (25)</b>  |  |                       |
| Vertical kilometer training                         |   |  |                       |
| Finding new routes (2)                              |   |  |                       |
| Training for Ultra races (2)                        |   |  |                       |
| Advice for my first race (2)                        |   |  |                       |

**Figure 1** Inductive analysis of the dimensions related to training

| Raw Data Themes                         | 1st order                                | 2nd order                      | General Dimension  |
|---|--|--------------------------------|--------------------|
| Achilles tendon pains                   |  |                                |                    |
| Foot tendinitis (2)                     | <b>Tendinitis (6)</b>                    |                                |                    |
| Iliotibial band syndrome (3)            |  |                                |                    |
| Aponeurosis                             |  |                                |                    |
| Myoclonia                               |  |                                |                    |
| Cramps                                  |  |                                |                    |
| Sore muscles and contractures           | <b>Muscle issues (7)</b>                 |                                |                    |
| Adductor pains                          |  |                                |                    |
| Stretching                              |  |                                |                    |
| Electrostimulation                      |  |                                |                    |
| Malleolus injury                        |  | <b>Pains and injuries (38)</b> |                    |
| Quintus varus                           |  |                                |                    |
| Effect of inappropriate shoes on stride | <b>Foot issues (8)</b>                   |                                |                    |
| Plantar pain and orthosis (2)           |  |                                |                    |
| How to preserve feet (3)                |  |                                |                    |
| Fatigue fractures (2)                   |  |                                |                    |
| Periostitis                             | <b>Sprains and fractures (7)</b>         |                                |                    |
| Running after an ankle sprain (4)       |  |                                |                    |
| Sciatica                                |  |                                |                    |
| Somatic pains                           |  |                                | <b>Health (67)</b> |
| Joint pains (5)                         | <b>Pain (10)</b>                         |                                |                    |
| Pains and injuries (3)                  |  |                                |                    |
| Gastric problems (2)                    |  |                                |                    |
| Dental occlusion and running            |  |                                |                    |
| Dehydration symptoms (2)                |  |                                |                    |
| Inguinal hernia                         |  |                                |                    |
| Side stitches                           |  |                                |                    |
| Pregnancy                               | <b>Physiology (15)</b>                   |                                |                    |
| Water retention                         |  |                                |                    |
| Ultra-races and hormones (2)            |  |                                |                    |
| Heart rate (2)                          |  |                                |                    |
| Rest (2)                                |  | <b>Prevention (29)</b>         |                    |
| Massages                                |  |                                |                    |
| k-taping (2)                            |  |                                |                    |
| Cream for muscles (2)                   |  |                                |                    |
| Cannabis                                | <b>Substances and practitioners (14)</b> |                                |                    |
| Salt                                    |  |                                |                    |
| Doctors and offices (4)                 |  |                                |                    |
| Alternative medicine (2)                |  |                                |                    |
| Solar cream and caps                    |  |                                |                    |

**Figure 2***Inductive analysis of the dimensions related to health*



The fifth first-order theme was called “pain” and comprised ten raw data themes, five of which were related to joint pain (ankle, knee, neck). The other pains were due to sciatica and somatic pains. Three discussions dealt with avoiding pain and injury in their general dimensions (e.g., *“I’m really annoyed about getting injured all the time, this is very frustrating.”*; *“How do you run for so long without pain?”*)

These five first-order themes constituted the second-order theme “pains and injuries that encompass the physical issues runners report as being critical for their trail running practice.”

The sixth first-order theme was called “physiology” and comprised 15 raw data themes. It included discussions about physiological processes (hormones, heart rate, water retention, rest), physiological states and trail running practice (i.e., *“Hello ladies, what is your opinion about running and pregnancy?”*), as well as observable signs (side stitches, dehydration symptoms).

The seventh first-order theme was called “substances and practitioners” and comprised 14 themes about substances (creams, drugs), doctors and alternative medicine, as well as physiotherapy (massages, K-taping): *“My physiotherapist showed me how to use k-taping to relieve my chronic knee pain”*.

“Physiology” and “substances and practitioners” gave rise to the second-order theme called “prevention”. Lastly, the two second-order themes “pains and injuries” and “prevention” constituted the general “health” dimension.

## Discussion

The aim of this study was to gain greater insight into the themes discussed on online forums dedicated to trail running, since we postulated that these themes might reflect emergent concerns about adapting to unsolved constraints during trail runners’ field practice. Moreover, analyzing the content posted on this online space was expected to produce information that would complement the information gleaned from the traditionally studied racing context, providing deeper insight into the way runners adapt to the unfolding and changing situations during trail races (Hauw et al., 2017; Rochat et al., 2017; Holt et al., 2014). Our findings are in line with those of Simpson et al. (2014) who showed

that runners relied on the community of practice to seek advice about effective training, and Kimmerle et al. (2012) who identified forms of knowledge based on peers’ anecdotes as the main form of experience sharing.

Our results showed that the discussion contents could be segmented into two main dimensions: training and health. The training dimension revealed that runners talked about their actual running practice by discussing the contents of their training sessions. This suggests a desire to qualitatively optimize the session contents by gathering information about alternatives and new exercises. The contents were of two types (1) classical contents that also pertained to other sports (e.g., marathon, track and field), such as HIIT and maximal aerobic speed and, in contrast, (2) specific exercises, such as running downhill or training for vertical kilometers, which were more specific to trail running. Moreover, the interest in cross-training, which includes another sport and physical conditioning, suggests that trail runners have a multidisciplinary approach to training practices, which might come from their sporting background and past experience.

The frequent demands for training plans suggest that runners are looking for an organizing frame, perhaps to compensate for the lack of a coach and/or to access the advice of a qualified person. This also highlights that runners manage their training organization on their own and the forum is a useful tool for maintaining this autonomy. It therefore seems reasonable to assume that an ultra-trail race (with distances of more than 300 km) is a great challenge that raises many questions, as the runners are expected to prepare on their own. Moreover, our results are congruent with those of Simpson et al. (2014) who showed that scheduling training sessions around everyday life activities (e.g., job, family, social relationships, etc.) was challenging for non-professionals in this demanding sport. Therefore, seeking advice on a forum is a way for these runners to find solutions getting inspired by others’ experience.

The second dimension was health, which underlies training since injuries are extensively discussed on the forum. It is interesting to note that pain and injury mainly concern the lower limbs, in line with previous findings on Running-

Related Injuries (RRI) (Hespanhol Junior et al., 2013; Lopes et al., 2012), suggesting that they significantly impact runners' concerns. It can therefore be assumed that these injuries are caused by trail running itself because of overloading, poor running technique and inappropriate rest-time management, suggesting that training and health issues are interconnected: adapted training management reduces the chance of getting injured and, inversely, preventing health problems enables efficient training and making the most of practice. Furthermore, previous studies have shown that health issues also emerge in competition, preventing runners from finishing their race (Antonini Philippe et al., 2016). Therefore, issues of health and/or inappropriate preparation emerge punctually, like an acute pain during performance, and lead to poor outcomes, such as an inability to finish the race.

Physiological questions concerned the more general health status, which suggests that runners are also concerned about how their health status impacts their trail running and conversely (e.g., the case of dehydration symptoms). We also suggest that the health issues that emerge during a trail running race significantly impact the runners' experience (since they are able to report them on the forum) and surely their race performance. In parallel, the themes of prevention and treatment suggest that runners are concerned about anticipating these problems by exploring solutions in advance. Here again, their sporting background and experience with previous injuries could play a significant role in the apprehension of health issues (Akrich and Méadel, 2002).

In conclusion, our results suggest that users are concerned with improving their knowledge about trail running, asking for advice and learning from the experience of community members to expand their range of activity to adapt to emergent issues, such as the effects of inappropriate preparation or concerns to avoid injuries. Forum analyses complement in-situ analyses of activity (i.e., interviews) as forums are a rich source of data on the salient elements of experience during practice and/or racing. In addition, posting on a forum suggests that runners have encountered significant problems that need to be shared with fellow runners, and this helps researchers to frame the recurrent

issues for further field protocols. Moreover, the diversity of covered themes suggests that trail runners are keenly interested in discussing a wide range of the dimensions of this activity, which supports the hypothesis that they take a careful and meticulous approach to resolving the issues inherent to trail running. Yet, this assumption is not completely congruent with previous findings (Akrich and Méadel, 2002; Broca and Koster, 2012; Delalandre, 2014), as we did not observe any confrontation, debate or opposition to health professionals or medical/scientific knowledge. Their willingness to acquire this knowledge opens an intervention field to cultivate a fruitful dialog by allowing the interaction between communities of professionals and trail runners mediated by the forum, to constantly negotiate ongoing issues and situation related to trail running (Galipeau and Trudel, 2006).

This study had some limitations: firstly, it collected data from a single forum, although this forum was frequently consulted by many French trail runners. Secondly, it would have been interesting to gain further insight into the context of achievement, i.e., on the field, to better understand how the issues identified in the forum results actually emerged and in what form and to characterize the typical situations that triggered the emergence of unsolvable issues. Thirdly, this study did not analyze in depth the replies to each message and therefore, we cannot explain how common knowledge emerges; however, this question points to a potentially interesting area for further investigations.

As trail running is not usually a club sport (Krouse et al., 2011), community forums seem to be a good vector for sharing the trail running experience and spreading knowledge. Moreover, Fang and Chiu (2010) highlighted that knowledge sharing was essential to sustain virtual communities of practice. As Culver and Trudel (2006) noted, communities of coaches need a facilitator who understands and can cultivate the virtual community of practice. From this perspective, we suggest that the presence of an expert acting as a "debate moderator" (i.e., qualified coach or sports doctor, for example) would be a practical way to enhance such a platform, in line with the proposition of Palosse-Cantaloube et al. (2014). Moderation strategies must be linked to the policy goals of the forum

(Wright, 2006); in case of the Raidlight forum, cybrarians (moderators who are experts on particular topics) are a pertinent solution as they could also act as community facilitators (Coleman and Götze, 2002) to convey informal learning (Lave and Wenger, 1991). This kind of intervention might also ensure the reliability of the forum contents and the quality of the information, which is shared and read by any user and visitor. It would also contribute to sustaining the trail runners' autonomy. In terms of injury prevention, a specialist would be likely to highlight the issues inherent to trail running by providing full and free access to runners with little basic knowledge.

Community forums can be useful tools for providing research-based information and therefore can be used to build potentially fruitful exchanges between researchers and users. Lastly, presenting research results to a non-scientific public might be a relevant way to assess their application to actual practice. In other words, community forums provide a space to build bridges between the scientific community and the user community. As Delalandre (2014) and Kimmerle et al. (2012; 2013) noted, forums are spaces where knowledge can be appropriated, but this knowledge is sometimes questioned and

negatively assessed, suggesting that the scientific field needs to open a dialog with practitioners and people who are directly implicated in the practice. Conversely, Metzger (2007) proposed a checklist for credibility recommendations elaborated for forum users to critically assess the credibility and quality of online information.

To extend the themes that have been identified on the forum sites, webpages with tip sheets, training plans provided by qualified coaches and articles could be offered. In addition, this written content on the website might also enhance the natural referencing of the website to ensure its quality. Finally, the information shared and written by the forum users is a precious source for specialized equipment brands, since they gain knowledge of user profiles and experience and better understand their expectations and the way they practice trail running. The study of these variables would allow brands to adapt their offers and innovate. This would open a wide field for developing a participative form of marketing, which might constitute a direct connection between the brand and the runners (Rowley et al., 2007).

## Acknowledgements

Financial support : Grants from ANRT under the CIFRE agreement (Industrial Convention of Learning by Research) with the Raidlight compagny and swiss universities.

## References

- Akrich M, Méadel C. To take a pill, to take a stand: Arguing about medication on electronic patient discussion lists. *Sci Soc Santé*, 2002; 20: 89–116, <http://doi:10.3406/sosan.2002.1546>
- Antonini Philippe R, Rochat N, Vauthier M, Hauw D. The story of withdrawals during an ultra-trail running race: A qualitative investigation of runners' courses of experience. *The Sport Psychol*, 2016; 30(4): 361–375, <http://doi.org/10.1123/tsp.2016-0039>
- Babinski LM, Jones BD, DeWert MH. The roles of facilitators and peers in an online support community for first-year teachers. *J Educ Psychol Consult*, 2001; 12: 151–169, [http://doi.org/10.1207/S1532768XJEP1202\\_05](http://doi.org/10.1207/S1532768XJEP1202_05)
- Balkhi AM, Reid AM, McNamara JP, Geffken GR. The diabetes online community: The importance of forum use in parents of children with type 1 diabetes. *Pediatr Diabetes*, 2014; 15(6): 408–415, <http://doi.org/10.1111/pedi.12110>
- Beaudouin V, Velkovska J. Constitution of a communication space on the Internet (forums, personal pages, electronic mail. *Réseaux*, 1999; 17(97): 121–177
- Biddle SJH, Markland D, Gilbourne D, Chatzisarantis NLD, Sparkes AC. Research methods in sport and

- exercise psychology: Quantitative and qualitative issues. *J Sport Sci*, 2001; 19(10): 777–809, <http://doi.org/10.1080/026404101317015438>
- Bilard J, Ninot G, Hauw D. Motives for illicit use of doping substances among athletes calling a national antidoping phone-help service: An exploratory study. *Subst Use Misuse*, 2011; 46: 359–367, <http://doi.org/10.3109/10826084.2010.502553>
- Broca S, Koster R. Health social networks. *Cah Numér*, 2012; 7: 103–116
- Bruchez C, Del Rio Carral M, Santiago M. Co-construction of knowledge about contraception on online forum discussion on the Internet. In: C. Thoër & V.A. Sironi, eds. *Media communication systems and medicines*, 245-271; 2009
- Coleman S, Gøtze J. *Bowling together: Online public engagement in policy deliberation*. London: Hansard; 2002
- Culver D, Trudel P. Cultivating coaches' communities of practice: Developing the potential for learning through interactions. In Robyn L. Jones, ed. *The sports coach as educator: Re-conceptualising sports coaching*, 97-112; 2006.
- Delalandre M. The internet forum, a place where scientific knowledge is assessed by sportspeople: An example in the field of body-building. *Rev Anthropol Connaiss*, 2014; 8(1): 123-142, <http://doi.org/10.3917/rac.022.0123>
- Dorey J, Guastavino C. Moving forward: Conceptualizing comfort in information sources for enthusiast cyclists. *Proc Am Soc Inf Sci Technol*, 2011; 48: 1–9, <http://doi.org/10.1002/meet.2011.14504801187>
- Ecoute Dopage. Available at: <http://www.ecoutedopage.fr/>; accessed on 09.01.2017
- Fang YH, Chiu CM. In justice we trust: Exploring knowledge-sharing continuance intentions in virtual communities of practice. *Comput Human Behav*, 2010; 26: 235-246, <http://doi.org/10.1016/j.chb.2009.09.005>
- Füller J, Jawecki G, Mühlbacher H. Innovation creation by online basketball communities. *J Bus Res*, 2007; 60: 60–71, <http://doi.org/10.1016/j.jbusres.2006.09.019>
- Galipeau J, Trudel P. Athlete learning in a community of practice: Is there a role for the coach? In Robyn L. Jones, ed. *The sports coach as educator: Re-conceptualising sports coaching*, 77-94; 2006
- Gettliffe-Grant N. Representations and knowledge construction on electronic supports: Learning French as second language on electronic forums. *Alsic*, 2003; 6(1): 65–10
- Greene JA, Choudhry NK, Kilabuk E, Shrank WH. Online social networking by patients with diabetes: A qualitative evaluation of communication with Facebook. *J Gen Intern Med*, 2011; 26: 287–292, <http://doi.org/10.1007/s11606-010-1526-3>
- Hauw D. Antidoping education using a lifelong situated activity-based approach: Evidence, conception, and challenges. *Quest*, 2016: 1–20, <http://doi.org/10.1080/00336297.2016.1220320>
- Hauw D, Rochat N, Gesbert V, Astolfi T, Antonini Philippe R, Mariani B. Putting together first- and third-person approaches for sport activity analysis: The case of ultra-trail runners' performance analysis. In: Salmon P, Macquet A-C, eds. *Advances in Human Factors in Sports and Outdoor Recreation*, 49-58; 2017, [http://link.springer.com/10.1007/978-3-319-41953-4\\_5](http://link.springer.com/10.1007/978-3-319-41953-4_5)
- Hespanhol Junior LC, Pena Costa LO, Lopes AD. Previous injuries and some training characteristics predict running-related injuries in recreational runners: A prospective cohort study. *J Physiother*, 2013; 59(4): 263–269, [http://doi.org/10.1016/S1836-9553\(13\)70203-0](http://doi.org/10.1016/S1836-9553(13)70203-0)
- Holt NL, Lee H, Kim Y, Klein K. Exploring experiences of running an ultramarathon. *The Sport Psychol*, 2014; 28(1): 22–35, <http://doi.org/10.1123/tsp.2013-0008>
- Hurdziel R, Pezé T, Daugherty J, Girard J, Poussel M, Poletti L, Basset P, Theunynck D. Combined effects of sleep deprivation and strenuous exercise on cognitive performances during The North Face® Ultra Trail du Mont Blanc® (UTMB®). *J Sport Sci*, 2015; 33(7): 670–674, <http://doi.org/10.1080/02640414.2014.960883>

- Kimmerle J, Gerbing K-K, Cress U, Thiel A. Exchange of complementary and alternative medical knowledge in sport-related internet fora. *Sociol Sport J*, 2012; 29(3): 348-364, <http://doi.org/10.1123/ssj.29.3.348>
- Kimmerle J, Thiel A, Gerbing K-K, Bientzle M, Halatchliyski I, Cress U. Knowledge construction in an outsider community: Extending the communities of practice concept. *Comput Hum Behav*, 2013; 29(3): 1078-1090, <http://doi.org/10.1016/j.chb.2012.09.010>
- Knobé S. Self-surpassing and transformation of the self. How to become an ultra-endurance athlete? (inquiry). *Terrains & Travaux*, 2007; 1(12): 11-27
- Krouse RZ, Ransdell LB, Lucas SM, Pritchard ME. Motivation, goal orientation, coaching, and training habits of women ultrarunners. *J Strength Cond Res*, 2011; 25(10): 2835-2842, <http://doi.org/10.1519/JSC.0b013e318204caa0>
- Lave J, Wenger E. *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press; 1991
- Lopes AD, Hespanhol LC, Yeung SS, Costa LOP. What are the main running-related musculoskeletal injuries?: A systematic review. *Sports Med*, 2012; 42(10): 891-905, <http://doi.org/10.1007/BF03262301>
- Malik SH, Coulson NS. Computer-mediated infertility support groups: An exploratory study of online experiences. *Patient Educ Couns*, 2008; 73: 105-113, <http://doi.org/10.1016/j.pec.2008.05.024>
- Marcoccia M. The animation of a discussion numeric space: The example of usenet forums. *Doc Numér*, 2001; 3(5): 11-26
- Marcoccia M. On-line polylogue: Conversation structure and participation framework in internet newsgroups. *J Pragmatics*, 2004; 36: 115-145
- Metzger MJ. Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. *J Am Soc Inf Sci Technol*, 2007; 58: 2078-2091, <http://doi.org/10.1002/asi.20672>
- Palmer C, Thompson K. The paradoxes of football spectatorship: On-field and online expressions of social capital among the "Grog Squad." *Sociol Sport J*, 2007; 24: 187-205
- Palosse-Cantaloube L, Lacroix I, Rousseau V, Bagheri H, Montastruc JL, Damase-Michel C. Analysis of chats on French internet forums about drugs and pregnancy. *Pharmacoepidem Dr S*, 2014; 23(12): 1330-1333, <http://doi.org/10.1002/pds.3709>
- Patoine PL. Studying Cyber-speeches to understand emergent literature. *Acta Fabula*, 2006: 7(1)
- Pegoraro A. Look who's talking - athletes on twitter: A case study. *Int J Sport Commun*, 2010; 3: 501-514
- Rochat N, Hauw D, Antonini Philippe R, Crettaz von Roten F, Seifert L. Comparison of vitality states of finishers and withdrawers in trail running: An enactive and phenomenological perspective. *PLOS ONE*, 2017; 12(3): e0173667, <https://doi.org/10.1371/journal.pone.0173667>
- Rowlands M. *The new science of the mind: From extended Mind to embodied phenomenology*. Cambridge: MIT Press; 2010
- Rowley J, Kupiec-Teahan B, Leeming E. Customer community and co-creation: A case study. *Mark Intell Plan*, 2007; 25: 136-146, <http://doi.org/10.1108/02634500710737924>
- Scanfeld D, Scanfeld V, Larson EL. Dissemination of health information through social networks: Twitter and antibiotics. *Am J Infect Control*, 2010; 38: 182-188, <http://doi.org/10.1016/j.ajic.2009.11.004>
- Sicilia M, Palazón M. Brand communities on the internet: A case study of Coca Cola's Spanish virtual community. *Corp Commun Int J*, 2008; 13: 255-270, <http://doi.org/10.1108/13563280810893643>
- Simpson D, Young G, Jensen PR. "It's not about taking the easy road": The experiences of ultramarathon runners. *The Sport Psychol*, 2014; 28(2): 176-185, <http://doi.org/10.1123/tsp.2013-0064>
- Staii A, Paganelli C, Romeyer H, Clavier V, Manes Gallo MC, Mounier E. Interactional dynamics and relation and relation to information in medical forums discussions. In: Millerand F, Proulx S, Rueff J,

eds. *The social web: mutation of communication*. Presses Universitaires du Québec, 297-312; 2010

Sudau F, Friede T, Grabowski J, Koschack J, Makedonski P, Himmel W. Sources of information and behavioral patterns in online health forums: Observational study. *J Med Internet Res*, 2004; 16: 0–10

Wenger E. *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press; 1999

Wright S. Government-run online discussion fora: Moderation, censorship and the shadow of control. *Br J Polit Int Relat*, 2006; 8: 550–568, <http://doi.org/10.1111/j.1467-856x.2006.00247.x>

**Corresponding author:**

**Nadège Rochat**

Institut des Sciences du Sport de l'Université de Lausanne

Quartier UNIL-Mouline- Bât Géopolis

1015 Lausanne, CH.

Phone : +41 (0)21 692 3605

Fax : +41 (0)21 692 3293

E-mail: [nadege.rochat@unil.ch](mailto:nadege.rochat@unil.ch)