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**Article Title:** The Story of Withdrawals During an Ultra-Trail Running Race: A Qualitative Investigation of Runners’ Courses of Experience

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## **Abstract**

We analyzed the courses of experience of 10 runners who volunteered to describe their experiences of withdrawal during an ultra-trail race. Data collected contained traces of past activities elicited in self-confrontation interviews. Data were coded and compared to identify structures in common sequences. Seven representative sequences were identified: feeling pain; putting meaning to those feelings; adjusting one’s running style; attempting to overcome the problem; other runners’ influences; assessing the situation; and deciding to withdraw. Results showed that disruptive events could cause progressive, cumulative, and varied transformations in runners’ courses of experience that led inevitably to withdrawal. Practical implications for mental preparation and race management are proposed.

**Keywords:** Experience, pain, coping, ultra-endurance, course of action, situated action, meanings

## Introduction

Ultra-trail running is one of a number of sporting activities that are typically associated with the idea of competitors trying to surpass themselves (Simpson, Young, & Jensen, 2014). Ultra-trail races involve running semi-autonomously for more than 100 km along marked trails in natural environments (International Trail Running Association, 2013). Even for highly trained runners, this is no easy task, and the potential difficulties include more than just the great distance to be covered, the time required to complete the race, or the weather conditions. The inherent difficulties of an ultra-trail race mean that participants must find, draw on, and make the most effective use of their physiological and psychological energy reserves. Even if a competitor’s goal is winning or beating a record, in this type of race it is also and above all a matter of finding the energy to complete it. Indeed, many participants are unable to find that energy and do not finish; race statistics show high proportions of withdrawals, e.g., 36 % and 48% of non-finishers in the UTMB 2015 (Mountain 40, 2015) and the Grand Raid 2014 on Reunion Island (Runraid.free.fr, 2015), respectively. There have been relatively few studies examining why competitors withdraw during ultra-trail races (Millet & Castell, 2012), particularly from the psychological point of view (Simpson et al., 2014). Given the discipline’s typical constraints, one might assume that runners simply run out of energy. However, another hypothesis about why athletes withdraw could be that they fail to preserve themselves efficiently. One means of approaching these questions is to borrow from the more numerous studies on ultra-endurance races.

Hughes, Case, Stuempfle, and Evans (2003), for example, characterized the personality traits of participants in the Iditasport Human Powered Ultra-Marathon, hypothesizing that their psychological makeup predisposed them to enter this kind of event. Using the *NEO-FFI* test, they identified that participants scored higher than the general population for extraversion and

openness. However, there were no differences in scores for neuroticism, conscientiousness, and agreeableness. A study by Mohd and Ali (2013) attempted to use six variables to describe the psychological profiles of 16 successful long-distance runners: anxiety during the competition, motivation, stress, social adaptation, body image, and ethics in sport. Their results showed that the runners described themselves as experiencing high levels of anxiety, but moderate achievement motivation and levels of stress. They also coped well socially within their milieu, possessed a highly positive body image, and had adequate sporting ethics. These psychological characteristics indicated a tendency to seek out new experiences that were within the ethical and social boundaries of sports, but also a competitive anxiousness suggestive of the importance afforded to both producing a strong performance and the uncertainty of achieving it. Although these personality traits may help us to understand why these athletes are suited for such extreme events, research has yet to provide much information on the phenomenon of withdrawal during endurance races.

Another area of research, which aims to analyze the participants' in-race experience, documents the psychological mechanisms of withdrawal during an event. A study by Holt, Lee, Kim, and Klein (2014) used interviews, race summaries, and photographs and video taken during the competition to identify elements of the withdrawal experience during the 125 km, ultra-endurance, Canadian Death Race. Results indicated that runners mentioned such negative experiences as injuries, gastrointestinal problems, pain, or thoughts about giving up. In response to these disruptions, the authors identified coping strategies which consisted in feeding, hydrating, and setting shorter-term goals as a mental technique (i.e., break the race down into smaller sections).

Lahart et al. (2013) studied the emotions, perceived functionality of emotions, strategies for regulating them, sleep quality, and energy intake and expenditure of four cyclists participating

in the 4,856 km Race Across America. They showed that these cyclists experienced optimal emotional states during less than 50% of the race. They progressively experienced greater emotional disturbances coupled with sleep deprivation and daily negative energy balances. Another study examined the relationships between moods, emotions, and perceptions of effort during a race of more than 3,600 km taking place over 10 weeks (Johnson, Kenttä, Ivarsson, Alvmyren, & Karlsson, 2015). By underlining the importance of perceptions of effort in how the race was experienced and, more precisely, the emergence of both negative and positive emotions, the study showed that motivation, group cohesion, and mental awareness and endurance were the key psychological factors needed for finishing the event. The authors also observed that one of the runners’ major goals was not giving up. In their analysis of ultra-marathon runners’ moods and emotions, Tharion, Strowman, and Rauch (1988) observed no statistically significant differences between race finishers and non-finishers, other than fatigue (i.e., finishers reported greater fatigue than non-finishers). They attributed these results to the fact that the finishers ran further and for a longer time. In their qualitative analysis of the differences between non-finishers and finishers, Holt et al. (2014) implicitly suggested that finishers appeared to have closely monitored their pace, and we can thus hypothesize that disqualified runners had not. They also observed that disqualified runners may have felt dejection at missing cut-offs or, inversely, acceptance due to the fact that they had completed other races. We can also hypothesize that non-finishers had various physiological and/or psychological weaknesses (perhaps in relation to their preparation, for example) that impeded them from finishing the race. They might also have become injured and unable to finish the race.

These studies clearly showed that although inappropriate effort-management during long events may have appeared to be partly responsible for withdrawals, one area of knowledge had not

been comprehensively analyzed: how was the decision to withdraw finally made? Is it a progressive process or is the decision to give up relatively sudden? Are there any warning signs? Are there twists in the plot of the race that decide whether runners withdraw or finish? Can runners prevent the emergence of precursors to withdrawal by adapting their activity? In order to improve our knowledge of the psychological mechanisms involved in race withdrawals, we propose a detailed analysis of 10 runners who withdrew during a particular race. We identified similarities between them, enabling us to map the typical story of runners who withdrew during an ultra-trail race.

As demographic studies have shown that most long distance runners are not professional athletes (Hoffman & Forgard, 2012), it can be assumed that they do not have coaching staff and spend most of their time training alone, as observed by Krouse, Ransdell, Lucas, and Pritchard (2011). Thus, investigating and understanding the typical stories that characterize withdrawal might provide a noteworthy and useful source of knowledge for runners, professionals working with runners, and those designing psychological interventions for them. Accordingly, the present study expands upon the research outlined above by focusing on trying to understand the mechanisms that runners use to help them manage long distance races.

To attain this goal and provide a detailed analysis of these races, we used the theoretical framework and methodology of the course of action approach (Theureau, 2003). Our framework included an enactive approach to human activity (McGann, De Jaegher, & Di Paolo, 2013; Stewart, Gapenne, & Di Paolo, 2010; Varela, Thompson, & Rosch, 1991) and emphasized an analysis of the different streams of experience meaningful to each person, i.e., streams that are “showable, narratable and commentable to an observer or interlocutor” and resulting from the succession of links between actions and situations (e.g., Theureau & Jeffroy, 1994, p. 19). In a sports context,

many studies have used this framework to show how a perceived experience during a sporting activity could be thought of as a succession of discrete sequences that have an impact on that activity’s outcome. For example, an analysis of the courses of action of high level table tennis players during matches enabled their performances to be characterized as a series of stages involving sounding out their opponents, followed by sequences of play where the most effective strokes would be used (e.g., Sève, Saury, Ria, & Durand, 2003). In acrobatics, studies have shown that routines are made up of a series of activities involving acrobats executing highly controlled movements or letting movements flow at key times. These moments of flow helped acrobats maintain control over acrobatic figures to ensure safe landings and link to the next figure (e.g., Hauw & Durand, 2004, 2008). Orienteering has been characterized as a succession of activity stages aimed at “preparing a navigation story to go to the control points” and “navigating a heading to the next control point”, and finally “reaching the control point and setting the control flag in the right place” (Mottet & Saury, 2013). Recently, the safety procedures for skydivers, from the moment they leave the aerodrome until they fold away their parachutes in their sacks, have been characterized into seven stages: checking equipment; feeling prepared for the jump; using the time in freefall; deploying the parachute; flying safely; ensuring a safe landing; and organizing structured packing. These studies showed that the outcome of a sporting performance (e.g., success, failure) resulted from breaking down an athlete’s activity into a succession of steps that could be considered as the stages of a meaningful experience. We might therefore also expect withdrawal from a trail-running race to be the result of a succession of identifiable steps. However, this expectation raises a number of associated questions. How many stages lead to this outcome? What is the nature of these sequences of activity? This implies that the analysis should be able to help us track the organization of sequences that push or drive runners towards withdrawal. In

summary, this study aimed to characterize and describe a typical runner’s race withdrawal during an ultra-trail race. To do this, we used the theoretical framework of the course of action approach to identify the typical sequences in runners’ experiences that finally led to withdrawal. We hypothesized that withdrawal was the result of a progressive, step-by-step process that pushed the runner towards withdrawal from the race.

## Method

### Participants

Eight male and two female runners, between 19 and 54 years old ( $M = 38.3$ ;  $SD = 8.90$ ), who had run one of the three *Grand Raid de la Réunion* races on Reunion Island, volunteered to participate in this study. All were amateur athletes with experience in very long endurance races and who had run between 29.14% and 77.30% of the race distance ( $M = 44.54$ ;  $SD = 15.43$ ) before their withdrawal. The longest race, known as the *Diagonale des Fous* crosses the island from the southeast to the northwest and is 172.6 km long with 9,996 m of positive and negative elevation change. The middle race, called the *Bourbon Trail*, is 97 km long with 5,655 m of positive and negative elevation change, and the shortest race is the *Mascareignes Trail*, 65 km long with 3,922 m of positive and negative elevation change.

The 2014 edition was particularly challenging because of difficult weather conditions, which began with rain and alternated between cold and hot temperatures.

### Data collection

Two types of data were collected to help build each athlete’s course of experience database: (a) traces of past activity, using the race map, and (b) recorded and transcribed data from the self-confrontation interviews.



Participants built up the traces of their past activity, one to three days after the race, by identifying where on the race map the changes in their experience had occurred during their run. Each one was asked to mark the map landmarks where their activity and experience had shifted (e.g., gastric problems, cramps, feelings of unease, high-speed running period). To help them, the race map was augmented with aerial and landscape photographs identifying resupply points, the running trail, altitudes, and other geographic indicators in the environment (e.g., place names, distances to the next resupply point). The self-confrontation interviews were carried out immediately afterward and lasted between 60 and 120 minutes. Athletes were asked to describe and comment on their activity during the race. More generally, prompted interviews used in previous sports sciences research (e.g., Briki, Den Hartigh, Hauw, & Gernigon, 2012, Hauw & Durand, 2007; Mohamed, Favrod, Antonini Philippe, & Hauw, 2015) were designed to collect information generated as the actions in the race story unfolded. This took three forms: (a) involvement (e.g., What were you trying to do? What were you thinking about?); (b) representaments (e.g., What was drawing your attention? What could you see? What were you feeling?); and (c) interpretants (e.g., What made you decide to do that?). Requests for interpretations and generalizations were avoided (Theureau, 2006). All interviews were recorded and transcribed for further analysis.

The interviewers were experienced in performing self-confrontation interviews with athletes from different sports. However, as they were not expert runners, they were consequently unfamiliar with the expressions commonly used in the trail running community. Thus, during the interview, they asked the runners to make the descriptions of their experiences explicit, by explaining trail running slang and expressions as and when needed (e.g., of their sensations, experience, etc.) so as to ensure the accuracy of the information collected. The researchers gathered

other race information in parallel (route map, resupply points, weather, etc.). Thanks to their experience in qualitative methods, the researchers designed a pilot study with which to familiarize themselves with the three different races and ensure that their questions were as pertinent as possible.

## **Data processing**

Data were processed in four steps, as illustrated in Figure 1: (a) rebuilding race stories using Elementary Units of Meaning (EUMs); (b) characterizing the story of each withdrawal by grouping EUMs into meaningful sequences; (c) identifying the representative sequences composing typical withdrawal stories; and (d) characterizing each withdrawal sequence-type in depth. Several measurements were taken in order to ensure data credibility.

**Rebuilding race stories using Elementary Units of Meaning (EUMs).** This process step identified and labeled the EUMs that characterized each unit of experience lived through by the runners during the race. By using the map information defined by each participant and the stories collected during self-confrontation interviews, identifying EUM consisted in breaking down experiences, step-by-step, into meaningful parts that answered the following questions: What was the runner doing? What was he/she thinking? What was he/she feeling? This was done for each course of action, allowing chains of EUMs to be built that corresponded to meaningful parts of each runner's race story. Labeling these EUMs used an action verb followed by a direct object, an adverb, or another object. Next, the underlying components of each EUM were identified using a set of more specific questions. For example, Involvement (Inv.) refers to the question, "What was he/she concerned about in this situation?" The Representamen (R) refers to the question, "What element of the situation was he/she considering, and what was he/she thinking or perceiving?" The

Interpretant (Int.) refers to the question, “What knowledge was he/she bringing to bear on the situation?” (See Figure 2).

**Characterizing the story of each withdrawal by grouping EUMs into meaningful sequences.** This process step examined the coherence relations between the EUMs. Each coherence relation was made up of units forming a chain around the meaningful concerns forming a sequence of experience in the runner’s activity. These sequences were labeled using a verb that reflected the runners’ main concerns during that situation, with a direct object used for the meaningful theme (see Figure 2).

**Identifying the representative sequences composing typical withdrawal stories.** We compared the sequences in the runners’ courses of experience in order to detect where common structures in the sequences were situated in time. When sequences contained a common theme and were identified in all the courses of action, they were considered to be representative sequences experienced by the runners who withdrew. They were also situated in time as a succession of sequences during their race. Thus, their order corresponded to the typical story of withdrawers.

**Characterizing each withdrawal sequence-type in depth.** After having identified the representative withdrawal sequences, we attempted to put boundaries on the diversity of their experiential content. To do this, we looked at each runner’s sequences in order to characterize the different constituent part of their courses of experience.

When first contacted, the participants were informed that the aim of the study was to examine how their races had unfolded. They were told that their participation was completely voluntary, that the data and analyses would be rendered anonymous, and that they might be presented in various professional and scientific settings. The protocol was approved by the Faculty of Social Science of the University of Lausanne research ethics committee and conformed to the

Declaration of Helsinki. Procedures were explained to the participants, who then gave their written informed consent.

### **Data reliability and analysis**

Several measures were taken to ensure data reliability. First, the researchers involved were experienced in conducting qualitative research, particularly in using the course of experience approach. Second, data were collected by experienced researchers in sports sciences and psychology, supervised by a third, experienced researcher in course of action methodology. They also underwent a detailed practical training session on how to perform this specific data collection and coding process. Third, data were coded independently by each of the three researchers. The coding procedure’s reliability was assessed using Bellack’s agreement rate (Turcotte, 1973) and ranged from 70% to 90% between coders for the different representative sequences and common structures between them. When all three researchers disagreed, the data were ignored; when two of the researchers agreed, they collectively re-examined the data until an agreement was reached with the third coder (no discrepancies were observed in these cases).

### **Results**

The withdrawers’ courses of experience were made up of seven representative sequences (i.e., feeling pain; putting meaning to those feelings; adjusting running style; attempting to overcome the problem; other runners’ influences; assessing the situation; and deciding to withdraw). Each of these representative sequences is presented below, including details of the different sequences that made them up. Figure 3 summarizes these results.

## Sequence 1. Feeling pain

This first representative sequence was made up of three individual sequences: *feeling bad*, *feeling physical pain*, and *experiencing digestive problems*. These were feelings which runners were able to identify, but which did not change their running activity.

The *feeling bad* sequence was linked to states of hypothermia, hypoglycemia, and shivering whose origins the runners could not clearly identify<sup>1</sup>. These bad feelings were experienced, but could not be linked to any identifiable cause:

“I arrived at the resupply point by night. I started to feel cold and then I got to a stage in the race where I started to tremble. It was just now and again, to start with, and then it got stronger and stronger and happened more and more often... but I didn’t really know why.” (R1)

The *feeling physical pain* sequence related to muscle, joint, nerve, and bodily pains. Muscle pains occurred in the lower limbs:

“I started to feel pain in my thighs. It was general thigh pain to start with and then quite clearly on the sides of the thighs—a place I wasn’t used to.” (R5)

Joint pains were located in knees and ankles: “I felt pain in the knee, increasing, first on the outside of the knee, and then it was really at the back of the knee.”

Neurological pains occurred along the spinal column or in the buttocks or lower limbs and were characterized by sharp pains or pins and needles in the legs:

“I started to have bad sensations in the legs, like a burning sensation, and tingling toes. I told myself that it wasn’t good but I carried on at the same pace.” (R9)

There were also bodily pains that manifested themselves as irritation to the skin, especially on the shoulders or between the legs.

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<sup>1</sup> Weather conditions were particularly testing during 2014’s Grand Raid competition, and they were almost certainly linked to this runner’s state, despite the fact that none of the participants mentioned those conditions explicitly.

The *experiencing digestive problems* sequence manifested itself as abdominal discomfort that eventually caused problems eating and hydrating:

“Runner: I started going up to Kerveguen, at an altitude of about 1,000–2,000 meters. The first part of the ascent went well, and in the middle I started to get a stomach ache. I wasn’t well. And when I wanted to eat a cereal bar, I just couldn’t. I couldn’t eat it... I couldn’t swallow anything. Why? I’d eaten some salty food, soup, and I’d put on dry clothes. Why does it happen? So I told myself ‘It’s going to be tough.’ So I kept on walking and my abdominal muscles hurt, especially running downhill. Other runners overtook me, but they are good runners, so...

Researcher: So you’re not concerned about that?

Runner: I’m not concerned at all. What really concerns me is this kind of bar in the stomach. So how to make it pass? I’m doing some stretching but it doesn’t pass. So I do the small downhill until Cilaos, because I know that in Cilaos there is a second military resupply point with a nurse.

Researcher: Did you not sleep that night?

Runner: No, I didn’t. I didn’t feel the need to sleep. Last year, I didn’t sleep either. But running downhill became tough because my stomach was very painful.

Researcher: And do you know why?

Runner: No, and that was the problem.” (R2)

## Sequence 2. Putting meaning to those feelings

The representative sequence for *putting meaning to those feelings* is built up of six sequences that attribute meaning to the feelings experienced, linking them to causes or consequences by using different elements taken from the particular situation (i.e., *the physical environment, weather conditions, equipment, the activity being done, physical capabilities, and health*). Meaning is given by linking the interpretants to the representamens, resulting in a lessening of commitment to continue the race.

The sequence in which feelings were linked to *the physical environment* (i.e., terrain) was related to known difficulties in running along (i.e., moving forward, ascending, descending), to

the slopes (e.g., steepness, technical difficulty of the terrain), or to potential risks of injury due to the “muddy, slippery” terrain:

“I start to feel tired, I’m telling myself that it’s just the beginning. My knee is painful. And the moral is going down. It was a really tough part. The terrain is very steep, it wasn’t easy at all, and I started to feel cold, because of the night.” (R4).

The sequence associating feelings with *weather conditions* took into account temperature, sensations of cold or heat, and consequent worries about injury and getting cold, or the inverse: “It was very hot, the sun was already scorching, and that’s why I felt cumbersome.” (R9)

Rain, wind, and fog were also associated with stated difficulties in running the trail and to the dangers of a lack of visibility.

The sequence associating feelings about *equipment* related to three types of links. First, participants identified material badly suited to the efforts involved. Inadequate or uncomfortable equipment caused skin irritations or blisters on participants’ feet (shoes), and all the feelings of discomfort that they identified during the race stopped them from running at their desired pace. Second, some material was judged to be unsuited to the weather conditions. Participants described how it let rain or wind through or did not keep them warm enough. Wet material became responsible for them feeling cold, cooling down, or being uncomfortable:

“While I was running, I could feel that something wasn’t right ... little by little, I realized that because of the wind and the cold, I had put on clothes that were now rubbing me and were causing all this discomfort on my skin.” (R2)

Third, poor management of spare clothes was also mentioned. Indeed, runners were allowed to leave clean, dry clothes at refreshment stations. Some of them underestimated the distance between stations or were surprised by the weather conditions, which were not those predicted:

“I was frozen, I was shivering and everything, and I suddenly realized that I hadn’t brought anything to get changed into... I was soaked to the skin, and there was still some distance to cover before I could get changed. I struggled with that until I got to the refreshment station where my spare clothes were and I could change them.” (R1)

The sequence associating feelings about *the activity being done* concerned the trail’s distance, participants’ thoughts about their physiological state, and being overtaken by other competitors. Bad feelings were linked to the great distance (both in km and days) that they still had to cover:

“I was already starting to feel tiredness, though perhaps you couldn’t tell. Yes, I was already starting to tell myself that it was the first night and there were still two to go. And I told myself that I was only at the beginning... I started to get a pain in my knee, and that’s when my morale and everything started to drop. Those were the bad hours for me, between 2 a.m. and 4 a.m. and, what’s more, it really wasn’t an easy section at all. It climbs very steeply and... and it wasn’t easy at all and the higher up you went, the more you could feel it.” (R9)

The sequence associating feelings about *physical capabilities* principally involved using up energy resources to counter fatigue:

“So I was moving forward ... I don’t even know how I was moving forward..., but not even at two... two... one km per hour, not even. That was it; I couldn’t go on, there. I told myself that that was it... I’d reached my limit, ‘There, this can’t go on. I’ve got nothing left to give.’... And once I got to the top... I couldn’t go on... I had nothing left.” (R7)

Identifying the problem of complete physical exhaustion is also associated with problems concentrating and remaining lucid:

“I had so little energy that I actually started to get... I was seeing, well, weird things. I started to see trees... but, I don’t know if they were trees... I thought they really were trees, and when I got close to the trees I saw that it was hallucinations; it was ... actually a man.” (R8)

The sequence associating feelings about *health* manifested itself through fears and doubts about the consequences of the discomforts being experienced. Participants thought about the



chances of the feelings that they were experiencing getting worse and about the possible effects on their future working lives:

“So then I told myself, ‘You are going to have to stop. You put so much into it, but it is not your livelihood. You’ve got a job too, you’ve got other things too, and you can’t take the risk... I don’t know, of being hospitalized because you can’t walk any more.’ So there you go—I preferred to stop.” (R9)

These doubts also affected participants’ motivation to keep running or to stay in the race.

### Sequence 3: Adjusting running style

This representative sequence brought together three different sequences characterized by modifications to the participants’ running styles, either their pace, the way they ran *in relation to the terrain*, or in terms of their *running action*.

The sequence characterizing a modification in running style in terms of pace mainly involved a reduction in running speed. Athletes were attempting to relieve discomfort and to see whether there was any improvement:

“Runner: I was dragging myself along, with a pain behind my knee. So I tried to slow down to see if it would stop.

Researcher: What did you do to relieve this pain?

Runner: I tried to run in a different way, to change my stride. I felt that it was less painful when I ran on the outside of my foot. And after that I tried to compensate with the other leg as well, but then I got cramps. It was a temporary solution that worked for a while. And then it happened in my head. I told myself to go on, I was muddy, so I walked slowly, but it was hard because I couldn’t see any end to it. I looked at my watch and realized that I’d only done one kilometer in two hours.” (R7)

The sequence characterizing a modification in how participants ran *in relation to the terrain* revealed runners’ specific preferences and/or difficulties in relation to the type of slope they were facing (ascending/descending). Modifications to running style were made according to slope specificities, but also as a function of where pain or discomfort was felt, bearing in mind that

it might be worse going up than going down. So as not to take any unnecessary risks, runners also did their best not to stray from the trail onto other tracks, avoided stepping on pebbles, and were careful of avoid any risk of falling over on slippery ground, which could have caused an injury: “I told myself that I shouldn’t take too many risks, so I concentrated on avoiding the classic obstacles that you find on the ground.” (R1)

The sequence characterizing a modification in participants’ *running action* involved compensating for identified discomforts, such as putting more weight on one leg than the other, leaning the body forward or to one side, modifying how their feet hit the floor (i.e., with the outside or inside edge): “I tried my best to avoid putting any weight on that side... I didn’t put my feet down the way I normally do.” (R5)

#### **Sequence 4: Attempting to overcome the problem**

This representative sequence brings together sequences about *taking breaks to recharge the batteries, treatment so one can carry on, getting warm to remove discomfort and distracting oneself to forget discomfort*.

The sequence on *taking breaks to recharge the batteries* was an attempt to let pain or fatigue pass. Runners stopped at places along the trail where they had not planned to in their race preparation: “I hydrated well and waited about an hour. I hadn’t planned to, but I was cooked... I told myself that I really had to get back what I’d lost.” (R9)

At resupply points or on arriving at the end of a stage, runners decided to rest and wait for dawn:

“So, at Hellbourg, I wanted to try to... sleep... I slept one hour, I lay down, I told myself ‘Never mind the race plan—take advantage of the night, recuperate, and then you’ll be able to get going again...” (R7)

Deciding on an unplanned sleep was also a means of anticipating the emergence of fatigue:

"Runner: I arrived at the resupply point and I lay down to sleep one hour.

Researcher: Why did you want to sleep? Did you feel sleepy at that moment?

Runner: No, not at all, but I wanted to make the most of the night. I just wanted to finish. So, I thought sleeping then would be beneficial. But I couldn't fall asleep immediately. So, I lay down at 9 p.m. and I put my alarm on for getting up at 10 p.m. I fell asleep and the alarm rang. It felt too early! I actually did get one hour's sleep. Then I ate and left."

The sequence on *treatment so one can carry on* covered runners' use of treatments to ease the significant discomforts that they were enduring. Some used a physiotherapist:

"I decided to see the physio, to find out whether he could do anything to help me. He'd know what was wrong with me and, above all, he'd help get me going again."  
(R1)

Some also tried to care for themselves:

"I finally decided to stop. And I did some stretches, I tried to stretch, I tried to loosen myself up to see if that would help me to get over these pains, so I lay down, I stretched, I know what to do in these cases. But the pain didn't go, so I hydrated, I ate, but it still didn't go. The burning, electric shock sensations were getting worse, so I told myself 'Take an anti-inflammatory pill.' I know that's not good, but... I drank and waited for one hour, but it didn't change anything." (R9)

The sequence relating to *getting warm to remove discomfort* involved runners using either their own equipment or the blankets and shelter at the resupply posts, or doing things to maintain their body heat so as to reduce their discomfort. Runners changed or dried their clothes or shoes, for example, or took shelter. Knowing that their body temperature would cool down rapidly, they spent the minimum amount of time necessary not moving or exposed to unfavorable weather conditions:

"And so there, I pulled up my shirt because it was a bit damp due to the rain and... it wasn't drying. I pulled it up, and I put my hands there instead so that I came down with my hands over the bottom of my belly, and... it was good, it made me feel a bit better." (R8)

The sequence relating to *distracting oneself to forget discomfort* involved not thinking about the efforts being made and the pain endured. Some runners sang or listened to music:

“Runner: I was almost falling asleep while walking.

Researcher: What did you do to deal with this?

Runner: I took a break at the resupply point: that helped me feel better. And I listened to some music: that really helped me to stay awake. And the sun was going to rise soon so... it was okay.

Researcher: Did you listen to any specific type of music?

Runner: No, it was just random music. Just listening to music helped me.” (R2)

Runners also concentrated on their inner feelings:

“Then, really, I just couldn’t run anymore and I walked really slowly... and, what’s more, it started to get very, very cold, and... and then I started to sing, and suddenly I was thinking about something else—I felt a little less discomfort.” (R1)

### **Sequence 5: Other runners’ influences**

This representative sequence was made up of three sequences that characterized interactions with the other runners: *harnessing the positive influences of other runners*, *collapsing under the influence of others*, and *changing one’s point of view on the situation because of others’ influences*.

The sequence relating to *harnessing the positive influences of other runners* characterized how one competitor’s actions or influence could either boost another participant’s morale or even his running itself. Thus, overtaking or being overtaken by another strong competitor had a very beneficial effect on morale and momentarily invalidated what the runner was thinking about his status: “I was going uphill, and I was alone. I really wasn’t feeling great right then, and then I overtook a few runners... I even overtook Laurent B., who is a professional cyclist. So, there, I told myself that I wasn’t doing too badly after all.” (R9)

All the runners mentioned that being able to run some of the trail alongside other athletes was positive. Talking, getting to know each other, thinking about something else, or not thinking about the pain and the long distance left to run, boosted runners' commitment by weakening their interpretant. Friends and family also had an important influence. Some runners planned to take regular snacks at the resupply points along the trail:

"It does you good, yes, knowing that... well... that there is somebody there... that's the nice part of the race, let's say. I had precise meeting points planned with my family for snacks, and it's true that at that time it really made me feel that I was coming through that rough patch... So I arrived at the resupply point where my wife and my son were waiting for me, smiling, so I felt better. I knew I was going to eat and change clothes. I took about twenty minutes over the meal, to spend some time with my family. Twenty minutes might seem short, but when you've set a goal in terms of rankings, twenty minutes is a lot. So, my wife had prepared everything for the meal; everything was prepared before the race; I knew what I was going to eat because I had tested it."(R8)

Some athletes took the time to read, send SMS, or call up friends and family to regain strength or pass the time:

"A friend of mine, her husband, and their children, who are all somehow part of my family, have been supporting me from the start. They have a seven-year-old girl who phoned me and said, 'Come on, keep going,' and it was really motivating.

Researcher: So you ran with your phone?

Runner: Yes, and the support staff put information on Internet each time you reach a checkpoint. They received messages on their phones, so they knew where I was, so they wrote me little messages or called me.

Researcher: How did you feel when you received these?

Runner: I'd never received so many messages—98 messages—and I answered every one.

Researcher: What were these messages about?

Runner: Little encouraging messages: 'Come on, this is so impressive!' or 'You can do it! Way to go, mate!' These messages motivated me because I felt so many people were supporting me and believing I would do it." (R3)

When medical care and advice were successful, they also reassured and relieved the runners.

The sequence relating to *collapsing under the influence of others* corresponded to the negative impact that other athletes might have on runners’ experiences. Thus, realizing that they were incapable of keeping up with the runner in front or were being overtaken by runners who were supposedly no better, could reinforce a runner’s negative experience:

“Normally, I should have been in front of him... I know his times, and I know that I am better. When I found out that I was a long way behind him, it gave quite a blow to my morale.” (R1)

Furthermore, seeing other athletes suffering could also slow runners down because it led to concerns and fears for their own health. This negative influence was boosted when a runner was injured, tired, or was having trouble advancing. Indeed, being overtaken by competitors of the same standard or below, whether or not they were in better physical shape, was perceived negatively and could lead to demotivation.

The sequence relating to *changing one’s point of view on the situation because of others’ influences* corresponded to changes in the runner’s commitment to finishing the race or withdrawing. Thus, we observed that the prospect of being able to share a comfortable car journey back with another runner who had chosen to withdraw led runners to edge closer to that decision too:

“Runner: At the next resupply point, I knew there were people I knew. And a guy behind me, that I also knew, was vomiting every five minutes. I heard him vomiting behind me and I said, ‘What are you going to do?’ And he told me, ‘I think I’m going to stop; my stomach hurts so much; I keep vomiting.’ And then he told me, ‘I see you’re not too good either: my wife can drive you back.’

Researcher: Did that influence you?

Runner: It did influence me, in the sense that I said to myself, 'Well, there you go, it's comfortable and I'll be able to go back in the car with them. I won't have to run around and look for somebody I don't even know to drive me back. In fact, I was almost sure that I was going to give up.' (R9)

We also observed the case of an athlete who was given medical advice to withdraw, and began to think about the potential consequences for his life and health:

"And when he tried to massage me, anywhere, he couldn't. He couldn't touch my thighs. We talked a bit. Well... maybe he wasn't really too keen on me going any further... I still had a bit of will to continue, but without being sure." (R3)

### **Sequence 6: Assessing the situation**

This representative sequence is made up of two other sequences: *making a negative assessment* and *assessing hesitation to withdraw*. These sequences bring together elements of experiences of the race so far and the prospects of the race to come, with two types of interpretant.

The sequences involving *making a negative assessment* involved linking a significant number of elements from the race so far, that characterized the runner's personal state (injuries, pain, fatigue), with elements of the race to come (kilometers and time) and how all these elements could get worse the longer the race took. The interpretant is a negative assessment linking goals left unattained or a comparison with past performances, plus knowledge about the rest of the trail and the runner's current state. The interpretant changed the race's significance by giving it a negative connotation that might push the participant towards withdrawal:

"I got to a point where I told myself that I didn't really want to do the next sections of the race in the state I was in... It was dangerous, the next bit was difficult, and I wasn't in a fit state any more... So I told myself, 'I'm stopping. I can't go on.' I couldn't do the 40 kilometers after Sans Souci in that state. I was just drinking water, I couldn't eat anymore: it would be impossible. If I fell down a ravine, who'd rescue me? I thought about my family and had two conflicting thoughts: 'I'm stopping. No, I'm not stopping.' Why? Because I wanted to cross the finish line with my family. All my friends had supported me, all that investment... So I was dealing with two stories: I'm stopping and I'm not stopping. But 'I'm stopping' was stronger. It's the first time that's happened to me. I just couldn't anymore... I was really tired on the downhill and I tried to run because I try to stay

brave, but I felt dizzy—really tired. Then I told myself, ‘You’ve eaten nothing, you’re exhausted, you’re struggling against pain... It’s over, it’s too hard.’ So I carried on, with the idea of stopping at Sans Souci. I got that clear in my head.” (R10)

The sequence involving *assessing hesitation to withdraw* involved weighing up the pros and cons of continuing or withdrawing, but not reaching a final decision. The interpretant leaves the runner full of doubts about the idea of withdrawal:

“I was thinking about the time constraint. They told me it took an hour when it was dry... but it was hot and everything... it was wet too. It was dark, I was going slowly, so I asked myself, ‘Should I carry on or not?’ Then I was too... maybe I was too slow. Suddenly, I said to myself, ‘Right. Let’s have a go anyway.’ I carried on, but I really wasn’t sure that I had made the right choice. I guess that I just had to see.” (R7)

### **Sequence 7: Deciding to withdraw**

Runners are now no longer asking themselves whether or not they are going to continue. They stop running, their race is over, and the decision is irrevocable. There are no other possible options:

“After my brainstorming on stopping or continuing, I listened to my inner voice. Then I clearly announced that I was stopping. Everyone said, ‘We respect your choice. You took the right decision. You already did 80 kilometers.’ That’s also what I was saying to myself: ‘You did 80 kilometers without sticking to a race plan, without food or drinking anything but water and you held out until here. That’s amazing. Be reasonable! That’s not a failure.’ I gave everything I had... I’ve got a military mindset, which wanted to go on and doesn’t accept defeat, even if it’s not a defeat. Even though my wife told me so too, I was surprised at myself for thinking, ‘It was good that I stopped.’ So, I really don’t regret it, because I ran a good race. I don’t mean ‘good’ in race management but in terms of ranking. Even when I felt bad, I managed to maintain my rank, and I told myself that there’ll be other races where things will turn out better.” (R10)

At this point, all hesitation has gone, and the runner’s negative assessments of previous sequences has finally led to the conclusion of the race’s story via a withdrawal. The decision to withdraw then triggered the runner to pass judgment on that withdrawal. The interpretant addresses



the positive consequences of withdrawal: “I withdrew, but it was the best thing to do. I could really have hurt myself.” (R2)

There was also evidence of immediate negative emotions, although some were nuanced:

“I was really disappointed. I told myself that it wasn’t the end of world... that it wasn’t that bad. I’d done... as I said, I’d done half, I’d had a great time, I’d enjoyed it, and then, well... it came apart, it all came apart.” (R3)

However, others were not so nuanced:

“I am disappointed that I withdrew because I’m disappointed for me personally, for my family, for my supporters, my wife too. Even though she trains with me, she made a lot of sacrifices.” (R6)

## Discussion

Using their stories, this study characterized representative sequences of the courses of experience of runners who withdrew from an ultra-trail race. Results showed that the withdrawers’ courses of experience were discernible via the six representative sequences (i.e., feeling pain; putting meaning to those feelings; adjusting running style; attempting to overcome the problem; other runners’ influences; and assessing the situation) that preceded the final decision to stop running (i.e., seventh sequence: deciding to withdraw). Below, we discuss these results in two sections: the overall organization of these sequences with regard to how they link together, and the organization of each individual sequence.

### Overall organization of withdrawers’ courses of experience

The overall organization of the sequences showed a singular chaining that characterized the typical story of the experience of withdrawal. Broadly speaking, these results matched our expectations and those of previous studies of segmented courses of action and their overall organization for sports performance purposes (e.g., Hauw, Berthelot, & Durand, 2003; Mohamed

et al., 2015; Sève, Saury, Theureau, & Durand, 2002). They suggested that withdrawal was the consequence of a progressively changing course of experience and was closely related to the unfolding events that, step by step, push runners towards this conclusion. However, our results revealed two significant new properties of the ordering and linkages between the sequences that composed the experiences of these withdrawals: progression and accumulation. The progression in the stories was characterized by a succession of sequences that gradually funneled the runner towards an overall experience where withdrawal became the only option. The first two representative sequences are stages during which the problem first emerges: pain or discomfort that the runner must attempt to comprehend. The next two representative sequences are stages of adjustment. We observed changes in running style and in race management factors such as rest stops and treatment. Despite these efforts, however, problems persisted, and during the fifth representative sequence runners tried to find support in the race’s social environment, i.e., family, friends, and other spectators. Other runners and this social environment unconsciously played a supportive role, either putting back the inevitable withdrawal somewhat or, on the contrary, acting as the catalyst pushing the runner towards his final decision. The sixth representative sequence is a stage involving an analysis of the situation and, although it may well generate further hesitation, a conclusive decision to withdraw is actually close at hand. The progression is thus characterized by an ever more complex problem that turns a feeling into an interpretation—a necessary adjustment to make or strive for—and then into a way viewing the other runners and the race itself. These results show how the course of experience can transform the problem’s boundaries little by little (e.g., Schön, 1992; Varela, 1989). The present results thus showed that unlike an instantaneous or short-term decision, withdrawal builds up through a succession of experiences linked to problems that develop in the runner’s body but which proceed to take on psychological,

and then motor, organizational, and finally social forms. This progression is also characterized by the cumulative effects of the runner’s experiences, becoming anchored in different parts of his running activity. The construction of this type of cumulative course-of-experience effect had been previously identified in safety training sessions for skydiving: through repeated interaction with their equipment or their action plans for each flight, skydivers had built up safety rules covering each stage in the jump process. In this particular example, the valuable experiences learned from past activities were reinforced by new experiences associated with situated actions during the jump activity (Mohamed et al., 2015) In the present study, the cumulative effect is based on the same logic of repetition, but it also adds a change to the nature of the experience—an experience which is enriched by affecting all the dimensions in which the runners’ activities are anchored. The first experience is purely physiological, but this changes into an action experience and then into a social one that generates thoughts that seem to bring all these experiences together into a whole. A coherent decision finally emerges from that whole and leads inevitably to the runner’s withdrawal. Other research has viewed giving up in sporting events as the result of sudden or instantaneous negative experiences (Holt et al., 2014), a conscious and deliberate evaluation of the probabilities of success in the sporting task to be accomplished (e.g., Cury, Biddle, Sarrazin, & Famose, 1997), or even a calculated cost-benefit analysis of that sporting goal (e.g., Guillet, Sarrazin, Carpenter, Trouilloud, & Cury, 2002). The present results, however, suggest that withdrawal during this sporting event (running an ultra-trail) resulted instead from a construction whose specificity was the transformational nature of the negative experience, building upon itself and eventually forcing runners to withdraw. The overall organization of the course of experience characterizes how the field of possibilities open to each runner is progressively narrowed down, sequence by sequence, funneling them towards withdrawal (e.g., Reed, 1993; Valsiner, 1997)

Although the data presented here revealed constructs common to all the withdrawers from the race, it should not be surmised that the overall organization of the experience constituted a strict or defined withdrawal story. Indeed, the further along the chain of sequences runners have progressed, the more limited their choices and the more likely withdrawal becomes. In other words, although all runners may experience pain or discomfort as they appear in the first sequences, and although they might adjust their running styles or reorganize their rest stops as described in the following representative sequences, and although they might all manage to make the most of the other runners as other studies on ultra-endurance races have revealed (Holt et al., 2014; Johnson et al., 2015; Lahart et al., 2013; Simpson et al., 2014), it is the cumulative disruption caused by these linked sequences in the course of experience that leads to withdrawal. The existence of a few sequences in a trail runner’s course of experience would thus not necessarily imply a withdrawal. Bootsma’s (e.g., Bootsma, Houbiers, Whiting, & van Wieringen, 1991) use of a *funnel* image to describe a mechanism of motor control—which is *open* at the beginning of a movement, but which becomes progressively narrower—can be used (see Figure 3) to characterize the general and temporal organization of withdrawers’ courses of experience. Further studies on this theme should be carried out in order to discover whether or not there is a point in the story leading to withdrawal where the final decision is still reversible. One hypothesis might be that the probability of withdrawal decreases as runners get closer to the finish line.

### **The organization of each individual sequence in withdrawers’ courses of experience**

The identification of pain or discomfort was the trigger for withdrawal from the race. This sequence’s characteristic is that athletes’ worlds change when they identify differences in them. That identification is based on an athlete’s intimate knowledge of the range of sensations a trail runner usually feels. This suggests that the runner’s experience is primarily organized around and

based on simple body self-awareness (Mehling et al., 2009). Runners *listen* to their bodies and monitor any changes in their states. Thus, they are not initially involved in a cognitive activity or any strategic management of effort. Another result underlined that commitment: initially, all the runners mentioned where their discomfort was situated, but not what might be the cause or origin of the problem. They did not immediately interpret or analyze what they were feeling, but rather they carried on running. The courses of experience were built based on the criteria of apparent normality, tolerance, and acceptance for those types of discomforts; in other words, in just the way pain can become an integral part of an athlete’s activities (Lahart et al., 2013; Meyers, Bourgeois, & LeUnes, 2001). Feeling discomfort appears to be something normal, without that feeling ever necessarily causing any analysis or adjustments to an athlete’s actions.

This state does not last, however, because the second representative sequence tries to make sense out of these disruptions. The identification of two distinct sequences in time suggests that the search for causes only begins when the disruptor reaches a certain qualitative or quantitative threshold in a runner’s course of experience, for example, because discomfort worsens or persists through time, or a pain becomes so sharp that it must be investigated. Further research could be carried out to better characterize this transition. This second sequence is thus a different type of exploratory sequence to that observed by Sève et al., (2002): trail runners did not test different unplanned possibilities, but instead seemed to associate disruptions to standard explanations such as the trail route, weather conditions, equipment, and the deterioration of their physical condition as time moved forward. The second sequence is fundamental because it generates all the adaptations that follow. Indeed, Johnson et al. (2015) underlined that success is closely linked to how athletes tend to interpret different experiences, and how those experiences are then used as opportunities for the remainder of the race.

Indeed, the two following sequences take those adaptations into account, showing them to be mainly behavioral and primarily focused on running techniques. The present results are consistent with those from other studies (Holt et al., 2014) that showed that runners developed such coping strategies to deal with factors that they themselves labeled as stressors. Similar results were obtained in a study of ultra-marathon runners (Simpson et al., 2014); these showed that when runners suffered a considerable increase in pain, they used coping strategies and tried to concentrate primarily on their running (pace).

Later on, other adaptations take over. These aim to extract the runner from the problem situation at hand and are at once behavioral and emotional. This sequence takes over when the sequence on adjusting the running style no longer provides the desired effects, and they match the coping strategies observed in marathon runners (Buman, Omli, Giacobbi, & Brewer, 2008). In order to eliminate discomfort, many runners in the present study not only used a behavioral coping strategy for their running style but also in other areas such as hydration, medication, and nutritional supplements. These results were thus similar to those observed in ultra-marathons (Acevedo, Dzewaltowski, Gill, & Noble, 1992) where, above all, runners stated that they needed a distraction from the pain (chatting with friends, listening to music).

The next sequence—*other runners’ influences*—can have either positive or negative impacts on participants. These influences either offer runners momentary respite from the disruption or accentuate their negative influence. In general, the present results confirmed the social character of these races, as had previously been observed in ultra-marathon runners who underlined the importance of the running community (Simpson et al., 2014), the importance of socializing with other runners (Hashimoto, Harura, Kuriyama, & Nishiyama, 2006), and even how appreciative they were of support, encouragement, and practical advice from that community

(Collinson & Hockey, 2007). The present study has shown the influence of others can have a positive and favorable effect on performance. Advice from relatives, medical personnel, and runners’ personal assistance undoubtedly has motivational effects. All the runners mentioned that being able to run or walk with a fellow participant was very positive and encouraging. On the other hand, the present results showed that the roles of other significant people around athletes can have a negative effect on them and, in a situation filled with doubts (medical advice to withdraw from the competition, the comfort of knowing that you can be transported to the finishing line with people you know, return to one’s family), have an influence on their courses of experience. Athletes found it difficult to cope with not being able to keep up with other runners, either through fatigue or because of pain, and reacted with a loss of motivation. This was also observed in a qualitative study of an elite athlete’s experiences linked to performance and coping during two races (Nieuwenhuys, Hanin, & Bakker, 2008).

The sequence before last—*assessing the situation*—resembles a kind of inner dialogue in which runners try to assess the shape they are in, what the race situation demands of them, and which measures they should take. Furthermore, this sequence occurs at a crucial moment in the race and can turn the current course of experience in a new direction (in this case, withdrawal). Indeed, this type of self-assessment during a sporting performance had previously been observed in top-level trampolinists: during the eighth move in a routine of ten skills, they figuratively took a step back to analyze how they would finish off the routine depending on how those first eight moves had gone (Hauw et al., 2003). Similarly, another study (Gammage, Hardy, & Hall, 2001) demonstrated that athletes indulge in an inner dialogue—whether displayed or hidden—as they try to interpret their feelings, perceptions, and beliefs, and give themselves instructions. The present results showed that either a negative assessment of the situation comes before the decision to

withdraw, or that assessment is characterized by a final hesitation. It could be hypothesized that these differences are due to the effects of different contexts related to runners’ personal histories. Further research would be necessary to understand how the distinction between certainty and hesitations comes about.

The final sequence—*deciding to withdraw*—appears to be an obvious one, or at least the only one possible at that instant. Runners make their final decision without asking themselves too many questions. It is a decision that engages the runner cognitively, yet in a prospective manner (i.e., using arguments linked to the expected effects of the rest of the race) rather than a retrospective one (i.e., weighing up the pros and cons of what has already happened). Runners thus spoke about the positive side of having withdrawn with regards to the rest of the race (e.g., “I could have injured or hurt myself”). From this point of view, the runner’s world switches from the race that was run to the athlete’s future life. Thus, the decision to withdraw is a liberating one for the runner for two reasons: it acts as a definitive cut-off from the disruptor and, by justifying the coping nature of the withdrawal, it allows commitment to future activities. Despite the potential significance of the disruptor, runners can, therefore, psychologically assimilate their withdrawal. Indeed, the present results are evidenced by the fact that some runners cry at the moment of withdrawal, as if all the tension has suddenly been taken away from them at once (Wong, Steinfeldt, LaFollette, & Tsao, 2011).

The present study has a number of limitations, which should be mentioned. From a methodological point of view, a retrospective design creates certain difficulties. However, the process of building new meaning requires that runners explain their histories, with the attendant risk of memory-recall (e.g., risk of confusion about the event chain, the fact of knowing the outcome of a precise event although runners were told to re-live their race, etc.). This is why traces



of past activities (i.e., race maps) were helpful for understanding the chronology of unfolding event. Other studies have confirmed that it is possible to limit the weaknesses of traditional verbal reporting (Hauw & Bilard, 2012; Hauw & Mohamed, 2015, Mohamed & al., 2015). Another limitation was the absence of a control group (i.e., finishing runners). Although the present results portrayed withdrawers’ experiences of their race in a qualitative manner, an additional comparison with finishers would have enhanced the robustness of the observations, helped to better identify critical periods in runners’ courses of experience and, potentially, distinguished precisely which events push runners towards an inevitable withdrawal. Further research might provide new results in this direction.

In conclusion, as a whole, the present study’s results offer a better understanding of how runners organize themselves during a race—they complete and refine the information from earlier studies on endurance events. The present study determined the existence of qualitative indicators associated with the construction of the race and relevant for the runners. Those indicators revealed a characteristic or representative story for withdrawal that could be described as a progressive, cumulative process associating diverse bodily, behavioral, cognitive, and social experiences. As a complement to our preceding suggestions, future research could also investigate: how runners deal with thoughts about the possibility of withdrawal before the race; how long different sequences last; potential variations in their order; whether some are repeated more often than others; whether gender and age differences affect coping with withdrawal; and whether, at certain points in the race, finishers find themselves in the same course of experience as withdrawers. In addition to a purely epistemic interest, such research could also provide runners with better advice on race and incident management, reduce the effects of negative impacts on their performance, and help to optimize means of using effective coping strategies.

## Practical applications

The present results are, first and foremost, useful to runners themselves, in as much as they will help them to learn how to interpret feelings of discomfort immediately, right from the start of a race, rapidly determine their origins, and adapt to them. By adapting rapidly, in response to how they feel, just as they do to environmental conditions, they will develop better race management capabilities. Indeed, one means of doing so is to stave off the emergence of feelings of discomfort from the very beginning of the race. Sport psychologists could have an important part to play in this type of sport, not just by helping runners to finish the race but above all helping them to achieve goals that have involved huge physiological and psychological investments, constraints, and sacrifices. A sport psychologist could help athletes put themselves back at the heart of ‘their’ sporting achievement. Using a course of action approach is extremely pertinent because it allows for a better understanding of what runners have lived through. Once difficulties have been identified, behaviours, emotions, and cognition have been developed, and situations have been characterized, runners will be able to analyse and better understand what they have gone through. Whether with a mental coach or alone, runners will be able to create new ways of approaching their races, improve their commitment, identify and anticipate problem situations, and thus have the mental resources to avoid race withdrawal. Jaeschke and Sachs (2012) provided a definition of mental toughness specifically for ultra-running: “the ability to persist and utilize mental skills to overcome perceived physical, psychological, emotional, and environmental obstacles in the relentless pursuit of a goal” (p. 64). Therefore, psychological and mental toughness can be fed by a detailed and constructive analysis of the course of experience that runners have lived through in previous races and then play a major role in them successfully completing future races.

Research has shown that mental skills training is beneficial for enhancing mental toughness (e.g., Bull, Albinson, & Shambrook, 1996; Clough, Earle, & Sewell, 2002; Antonini Philippe, Sagar, Gerber & Hauw, 2016). Our findings also indicate the importance of mental techniques in the development of mental toughness through the control of emotions. This highlights the importance of helping athletes to improve their mental skills to enable them to have better control over their emotions and/or behaviour in situations that require them to be mentally tough (Connnaughton & Hanton, 2009; Coulter et al., 2010). Accordingly, it appears that in order to maintain and further enhance runners’ mental toughness, sport psychologists could take a more active role by explicitly helping them to develop and strengthen their mental skills strategies in an adaptive way. Thus, sport psychologists, starting with each athlete’s individual resources, should try to understand what athletes know and do, and then teach them techniques that help them enhance their mental toughness.

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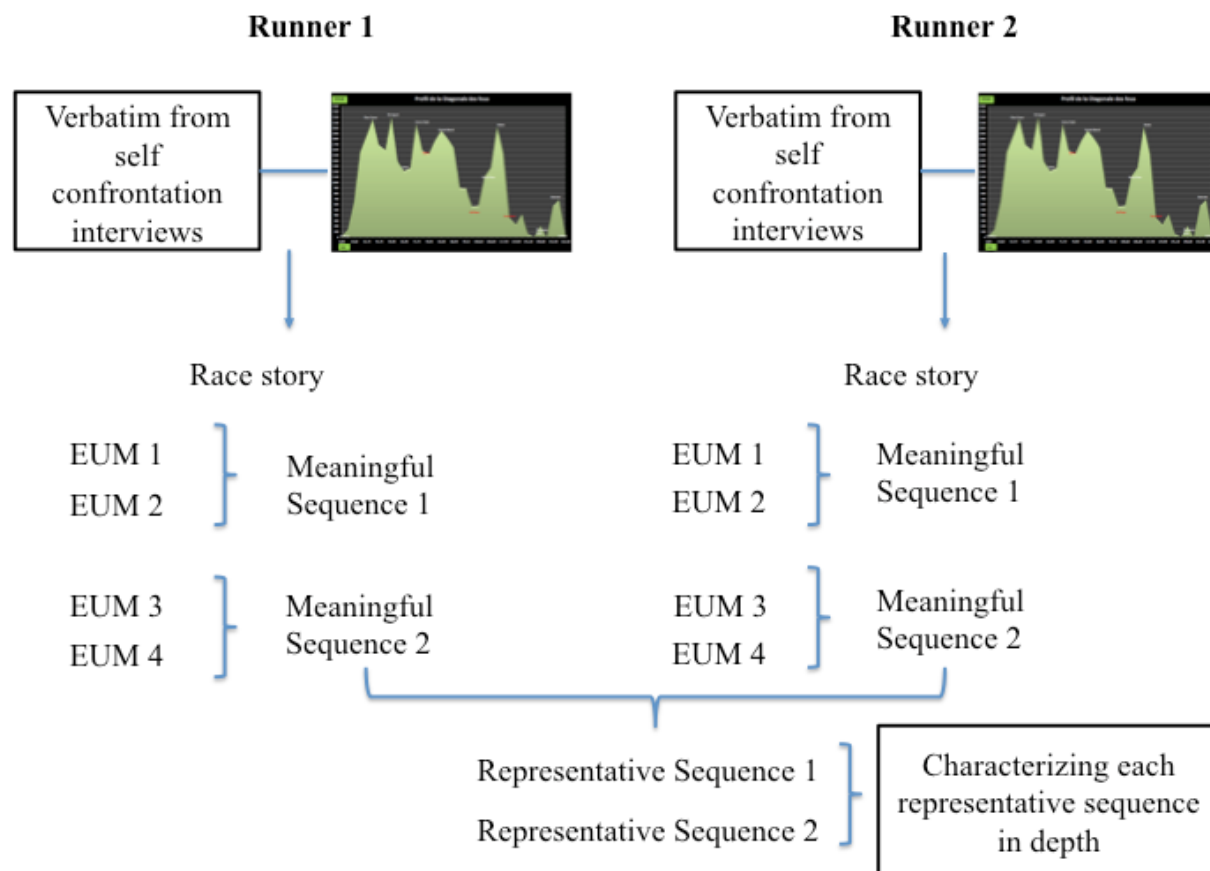
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**Figure 1.** The steps of data process





## Figure 2. A coding example

### Verbatim (extract)

“We go down, into Mafate, across the Merles plain as showed in the map; it’s all right there, I can trot along (EUM1). There is a big resupply post at Marla. So, on the way down, I get overtaken by two runners (EUM2). I can still remember it; a Japanese and a Spaniard, and so I say to myself, “Darn it, I wish I could... I wish I could be running like them.” After all the training I did, now I just can’t, I’m powerless. Those two really made me feel down. The pain is still there... I continue as best I can; I keep descending and... I had to walk down the steep descents... same as before, tensing up because it hurts. And it really started to get tough there. Then there was the food. Fewer and fewer things were going down; it was getting worse and worse. And one I got to Marla (EUM3), exactly here (pointing the spot on the map) it was getting painful because... um... same thing, I couldn’t eat or drink... um... drink much at all. I wanted water because it was still hot. And then I got to Marla.”

### Race story (extract)

#### EUM1: Trots down

Inv.: Move forward towards resupply at Marla

R: Pain in descents

Int.: It will be all right

#### EUM2: Is overtaken by two runners

Inv.: Move forward towards resupply at Marla

R: Pain in descents, powerlessness, they did me in

Int.: It’s tough

#### EUM3: Walks into Marla

Inv.: Move forward towards resupply at Marla

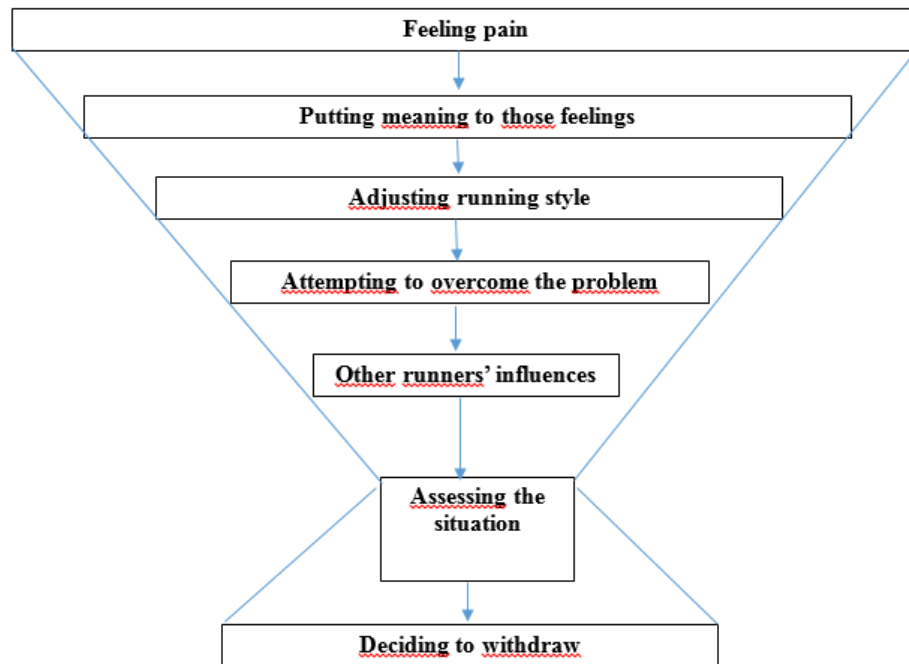
R: Pain, thirst, fatigue, inability to eat

Int.: It’s really tough

#### Sequence:

Runs on descents  
 but feels muscular  
 and stomach pains

**Figure 3.** The unfolding of the experience of withdrawal



**Table 1.** Participants’ data from the three different trail running races

<b>Runners</b>	<b>Kilometers (km)</b>	<b>Percentage of the total distance covered (%)</b>
<b>R1</b>	173	29.14
<b>R2</b>	173	29.14
<b>R3</b>	173	38.18
<b>R4</b>	173	38.30
<b>R5</b>	173	43.34
<b>R6</b>	173	50.49
<b>R7</b>	173	50.52
<b>R8</b>	173	77.30
<b>R9</b>	97	44.90
<b>R10</b>	97	46.90