RBCE
Revista Brasileira de Ciências do Esporte

ORIGINAL ARTICLE

Social aspects and sports performance: the principle of social-corporeal individuality[1]

Aspectos sociais e performance: o princípio da individualidade sociocorporal

Aspectos sociales y desempeño: el principio de la individualidad sociocorporal

Diego Costa Freitas[a], Gustavo da Motta Silva[a,b]*, Sílvia Maria Agatti Lüdorf[a]

Keywords:
Endurance;
Training;
Performance;
Qualitative study.

ABSTRACT
The study aims to analyze sociocultural aspects of the practice of trail running and how these relate to the performance of amateur athletes. We used a qualitative perspective to observe the participants, as well as field-notes. Semi-structured interviews were conducted with amateur athletes of regional prominence. Data were processed considering content analysis. For those under investigation, trail running, besides relieving daily drudgery, is seen as a setting which enables personal development and social interaction. We conclude that elements of a non-biological nature connected to a practice routine must be considered when planning said practice, since they seem to create impacts on athlete performance.

Palavras-chave:
Resistência;
Treinamento;
Performance;
Estudo qualitativo.

RESUMO
O objetivo deste estudo é analisar aspectos socioculturais envolvidos na prática do *trail run*, e como estes podem se relacionar ao desempenho esportivo de atletas amadores. Sob um olhar qualitativo, realizou-se observação participante, entrevistas semiestruturadas e registros em diário de campo. O tratamento dos dados foi realizado à luz da análise de conteúdo. Para os investigados, o trail run, além de desafogo aos males sentidos no dia a dia, é visto como um ambiente que permite o desenvolvimento pessoal e a interação social. Conclui-se que elementos de natureza não biológica ligados à rotina de treinos devem ser considerados no planejamento do treinamento, uma vez que parecem gerar impactos na performance de atletas.

Palabras-clave:
Resistencia;
Entrenamiento;
Desempeño;
Estudio cualitativo.

RESUMEN
La investigación tuvo como objetivo analizar aspectos socioculturales de la práctica de trail run y como se los pueden relacionar al desempeño deportivo de los atletas. A partir de la perspectiva cualitativa, se realizó una observación participante, entrevistas semiestructuradas y registros en el diario de campo. Además de un desahogo del día a día, los investigados comprenden el trail run como un espacio de desarrollo personal e interacción social. Se concluye que elementos quedados fuera de la naturaleza biológica están relacionados a la rutina de entrenamientos y podrían ser considerados en el planeamiento, pues existe la posibilidad de generar impactos en el desempeño de los atletas.

[a]Universidade Federal do Rio de Janeiro, Escola de Educação de Educação Física e Desportos. Rio de Janeiro, RJ, Brasil.
[b]Pontifícia Universidade Católica do Rio de Janeiro. Rio de Janeiro, RJ, Brasil.

***Corresponding author:**
Gustavo da Motta Silva
E-mail: gustavomotta1990@hotmail.com

Received 29 August 2022; accepted 8 November 2022.

[1] This article is derived from the doctoral thesis "Managements of the body of "elite amateurs" of the trail run: the sociocorporal individuality", authored by Diego Costa Freitas, developed in the Graduate Program in Physical Education at EEFD/UFRJ.

DOI: https://doi.org/10.1590/rbce.44.e005622

INTRODUCTION

According to the *International Association of Athletics Federations* (IAAF, 2015), trail running features routes that are preferably done on dirt roads, mountains, deserts or forest trails. Recent studies associate contact with the outdoors as encouraging for healthy behaviors such as the practice of physical activities (MacBride-Stewart, 2019; Deelen et al., 2019; Luna, 2019; Qviström, 2016). Characterized by closeness with nature on challenging routes, trail running has had a significant growth in the last decades (Hespanhol et al., 2018).

Studies centered on biomechanical, physiological, and technical aspects of running (Manechini et al., 2020) and trail running are predominant in the academic literature, with the use of equipment, emphasizing the improvement of performance or the prevention of lesions (Mo et al., 2021; Lima et al., 2021; Weir et al., 2020; Jewell et al., 2019; Vercruyssen et al., 2014; Daviaux et al., 2013). However, studies where sports are associated to social and cultural aspects have also been observed, though to a lesser extent (Hockey and Allen-Collinson, 2016; Davies et al., 2019; Deelen et al., 2019; King and Weedon, 2021; O'Brien et al., 2021).

Thus, studies normally focus on the biological or sociological aspects, though the communication between these different theoretical references appears to be insufficient. As far as we could verify, this duality is not observed only in running and trail running. Recent review studies on sports preparation acknowledge the importance of the sociocultural aspects in sports practice, but the discussions do not delve much into the matter (Mujika et al., 2018; Leoni, 2018; Afonso et al., 2017; Gabriel and Zierath, 2017).

Nevertheless, even in the early decades of the 20th century, Marcel Mauss (1979) had created the concept of "body techniques", arguing that human movement is connected to biological issues and its symbolic component. Even with what was developed by Mauss (1979), and perhaps due to the fragmented nature of modern science (Smith, 2010, 2005), there is still a great deal of difficulty in understanding man as a multidimensional being, or as a "total man" (Mauss, 1979).

Combining the sociological and biological perspective can help unveil important issues that have not been fully explained in relation to practice and performance. Identifying sociocultural components that interfere in the adherence and the degree of dedication to practice appears to be a promising tool for coaches, athletes, or even recreational athletes.

An individualized adaptation of practice requirements demands knowing the logics that contemplate the subjective conditions present in sports that are not always elucidated by means of traditional studies on sports practice. The hypothesis is that there are elements of a non-biological character connected to practice routines that substantially impact the level of effort and, consequently, athletic performance.

Therefore, this study aims to identify and analyze sociocultural aspects of trail running and how these are related to the sports performance of amateur athletes. In addition, this study intends to expand the understanding of the idea of sports performance in a multidimensional perspective.

METHODOLOGICAL PROCEDURES

The present study, of a qualitative character, will not be based on a rigorous mathematical model, but develop a coherent system of relations with the systematic investigation of specific phenomena, with the purpose of providing general properties (Bourdieu, 1994).

COLLECTING DATA

As recommended for this research paradigm, we used a triangulation of techniques (Bauer and Gaskell, 2000). These are a) participant observation; b) qualitative interviews; c) field journal.

PARTICIPANT OBSERVATION

The present study is similar to what is proposed by Wacquant (2004), who, by means of participant observation, places himself as researcher and boxer apprentice at the same time. To Crossley (2007), the body is not only a measurable, visible, palpable substance, it also has a dimension that is not easily accessible, including values, sensations, and feelings.

The researcher's involvement is essential in participant observation, and their capacity to emphasize aspect of the group from an insider's perspective is fundamental (Flick, 2011; 1998). The technique was carried out for 21 months and consisted of the researcher's immersion as a coach and runner in the setting of sports counseling for trail running in the city of Rio de Janeiro. In counseling, on-site practices were done on weekends. Moreover, each participant had a practice worksheet to be implemented during the week. Among the counseling participants, aside from the coaches (only two), there were clients (around thirty[1]) and amateur athletes (around ten).

QUALITATIVE INTERVIEW

According to Bourdieu (1994), the study group was chosen based on subdivisions of pre-existing categories in the research setting. Thus, we chose amateur runners with prominent sports results in the studied area. These runners were identified by means of having been on at least one podium in the 3 main mountain races taking

[1] As with any service of this type, the number of clients and athletes could vary slightly during the 21 months in which the research was carried out.

Table 1. Profile of interviewees.

Identification	Sex	Year of birth	Marital Status	Academic background	profession	Began running
R 1	F	1971	Single	Physical Education	Military police	1991
R 2	M	1985	Single	Physical Education	Running Coach	2005
R 3	F	1990	Single	International Relations	English Teacher	2015
R 4	M	1982	Married	High school graduate	Professional driver	2009
R 5	M	1978	Married	High school graduate	Machine operator	1997
R 6	M	1971	Single	Physical Education	Running Coach	1988

Source: Developed by the author.

place in Rio de Janeiro from 2015 to 2017: XC Búzios; XC Itaipava; World Trail Run Arraial do Cabo. These competitions attract many contestants because of the prize and the organization. All the selected runners compete in distances between 10 km and 32 km.

The interviews were based on a previously validated semi-structured guide[2] [3] (Bauer and Gaskell, 2000). Each interview lasted around 40 minutes; they were audio recorded and later transcribed. We carried out six interviews with trail runners (Table 1).

FIELD-NOTES

Notes were taken in a field-notes throughout the 21 months of the study (Flick, 1998, 2011). These were recorded on a mobile phone and later transferred to the computer. Practice, groups on social networks, chats and mainly competitions were particularly rich moments for observations and notes. With this technique, we obtained data of a subjective nature, mainly connected to the runners and their practice routine which was essential for the development of the present research.

DATA ANALYSIS

Data processing was based on content analysis favoring categories of analysis that emerged in the field, based on the criteria of repetition and relevance. Data presentation was guided by the analytical categories that were discussed considering the field information, the researcher's experience, and the theoretical references (Pope and Mays, 2006).

[2] The questions in the interview guide included socioeconomic data and the following: How did you become involved in running? What is your practice routine? How do other runners see you? How do you feel about your body? Where do you go for advice about the practice of physical activities? Do you wish to make any further comments about the topics mentioned?

[3] Validation was done based on the evaluation of the question guide by five specialist professors in the area, besides the completion of a pilot study.

PRESENTATION AND DISCUSSION OF DATA

As an organizational strategy, this section was subdivided into two parts. First, four emerging categories in the studied area were presented: extra routine; discipline; competitive side and price to pay (abnegation). Second, based on the categories found and the gap observed in the literature regarding sociocultural aspects of sports performance – though tentatively - was the proposal of the idea of corporeal individuality as a new practice principle.

WHEN LIFE IS A RACE

The research showed that running is usually selected by people who the main objective is to lose weight, improve the physical conditioning, leisure, and so on. In these situations the activity is associated with achieving a specific goal. The practice becomes an act indispensable in their lives or, like other studies indicate, a "necessity". So, the runners allege a mixture of feelings which stimulate them by the "endorphin sensation". In the other hand, it's frequent when beginners quit or change to a different kind of sport.

Even though they do not intend to become professional athletes and receive national acclamation, some runners cultivate being athletes in their own imaginary and, therefore, of being recognized in the social setting of sports practice. Before or after work, or quickly during lunch break, practice is seen as **extra routine**, where days off are left for the longer and more grueling practice:

> "*When I'm off, I practice in the morning, and when I'm working, I do it at night, and have the weekends off.*" (R1[4]).

> "*My priority is work, first I work as a personal in the morning, then I go to college, then I train… it all works. I give more attention to more specific practice on my day off.*" (R6).

[4] To preserve the image of the interviewees, runners are identified by the letter R, followed by a number from 1 to 6, following the order of the interview. It is also important to say that a limited number of comments were used as examples due to the need to adapt to the number of characters.

The trail can be seen as a portal where runners are transported to a parallel world. They leave behind their daily lives and become somewhat "super- human", with special powers that make them different from the rest, placing them in a privileged social position. Wacquant (2004) reported the same feeling in boxers, who felt they were protected in the boxing gym.

Also, according to Wacquant (2004), the boxers who went through exhausting practice with elevated physical effort, consider boxing a second job, and dreamed of a professionally victorious career. Similarly, the degree of involvement of elite amateurs with trail running is even more surprising, since even if they do not have any hope of becoming professional runners, the interviewees still participate in running responsibly and diligently.

For Bourdieu (1986), society can be thought to function based on the idea of capital, exchanges and profit for other relations that are not economic, but symbolic. Theses apparently selfless exchanges end up overlooking the reach of economic capital regarding other possibilities for profit that are not material. In this sense, Crossley (2007) argues that, when analyzing a physical activity, it is essential to understand the exchange of capital that make sense out of these, and that contribute to the participants' dedication.

Specifically, in this study group, there was no financial gain that could ever cover the costs of the logistics of practice, competitions, and travel. The reward may possibly be, in the case of elite amateurs, the status and visibility in a specific social setting.

Another relevant aspect in elite amateurs is discipline for the proposed practice. Except for some circumstances, normally associated to a health issue or work, they do not even consider the possibility of not practicing:

> *I see many of my friends saying, 'well I couldn't go to practice today, tomorrow I'll make up for it", and I think, 'what?' That's out of the question, if it's on the worksheet, you have to practice*. (R3).

> "*I am very disciplined, I'm a real pain in the neck. I rarely give up on practice, except if I'm sick, I'm that nerdy*. (R5).

Discipline in practice seems to come naturally for the interviewees. Focus and determination apparently do not give way to feelings or sensations that could hamper the "extra routine" they have as runners.

When sports are seen as a culturally rooted activity (Bourdieu, 1993), several adjustments are incorporated to a person's lifestyle. This goes from it being a relief from daily drudgery to a social setting that enables personal development and social interaction (Skinner, 2015; Shipway and Holloway, 2010).

In the case of elite amateurs, the activities that are part of trail running include: practice routines, financial investments, physical and mental discomfort, sacrifice and resilience. This whole "package" demands a high level of discipline. According to Hockey and Allen-Collinson (2016), in a study done with diligent runners, among the changes that occur with the high level and intensity of practice, the ability to resist and bear the load of practice, routine and exhaustion is the most remarkable.

For elite amateurs, competing, dedicating themselves to the utmost and beating adversaries are the main motives to keep their discipline in this arduous routine. Some characteristics that evince the competitive side of these runners are seen here:

> *I don't expect to be in the Olympics, but I want to beat myself really, maybe reach the podium, or win a good position in a hard race, but the motivation is personal*. (R2).

> *I want to compete, I like competing. And running is about competing, even if you're friends out there, but when you're at the starting line, when the bell rings, that's it*. (R4).

There is evident confidence seen among the interviewees in that, if they dedicate themselves to the maximum, the desired results can be reached. More than that, they can transfer the motivation for a race to the preparation phase. They somehow seem to carry this will to win to moments with no spotlights, in other words, in practice routines.

When observing a group of amateur runners, Luna (2019) noticed that, even when they demonstrate a good level of performance, they try not to show any effort, suggesting they could run even more. On the other hand, in the case of the runners in this study, they are proud to show exacerbated competitivity.

In the panorama observed with elite amateurs, perhaps due to the level of involvement and competitivity, they are driven to resist and tackle pain in pursuit of victory. As Le Breton (2009) posits, some athletes go after alternative challenges where socials structures limit daily tasks, filled with banal, predictable, and repetitive moments that repress abilities such as courage, creativity, and resistance.

It is important to emphasize that, in more extreme cases, there is the possibility of physical exercise becoming an obsessive-compulsive behavior (Banbery, Groves and Biscomb, 2012). Therefore, these runners seem to walk a fine line of intricate limits between discipline, focus and organization, on the one hand, and narcissism, obsession, and compulsion on the other.

To achieve this level of competition, the interviewees pointed out several factors, among which are focus and determination, to follow practice routines. However, dedication often means there is a price to pay (abnegation):

> *I'm sometimes … not there for my son and wife very much, so you kind of pay a price. It's a high price to pay, but when I can, I try to be there for them*. (R4).

Unfortunately, you have to put that aside, not go to a party with friends or family... especially if it's the day before a race, you have to negotiate with family, so it doesn't look bad. (R5).

Skinner (2015) argues that having time to compete is not enough, you need time for practice, especially when you have high level practice, as is the case with the interviewees. The author corroborates Shipway e Holloway (2010) in saying that there is detailed time management to combine practice and other tasks, such as family, physiological needs, leisure, and other daily activities.

Bourdieu (1986) demonstrates that a form of capital is configured through social relations as well. Social capital is the aggregate of real or potential resources that are linked to owning a long-lasting network of relations of reciprocal familiarity and recognition that are more or less institutionalized. In the case of the elite amateurs, when dedicating so much time to practice and races, besides their regular jobs, time with family is reduced. On the other hand, for these runners, their activity is a chance to broaden their social circle, where they find a favorable setting for the importance given to personal accomplishments. The large network of relationships developed among trail runners enables the accumulation of social capital, thus greatly influencing their dedication to the activity.

In several contexts, such as the symbolic, economic, and social; physical capital becomes a possible provider of other types of capital (Wainwright and Turner; 2003; Bourdieu, 1994). Hence, as they become known in the milieu because they had been on podiums in races in which they ran, thus acquiring social capital, the interviewees receive support from those who wish to be associated to the image of the winning athletes. In the amateur setting, though it does not cover their cost fully, this support generally occurs not in a directly financial form, but through waivers in the cost of professionals, supplements, sports material, race entry costs, transportation, and lodging. This transition of capital is enabled by their special performance, i.e., by the physical capital acquired which allows them to participate, by means of symbolic exchanges, in an activity of high economic cost (Shilling, 2005; Bourdieu, 1993).

The majority of trail run competitions is far away from urban perimeter and includes extra taxes with trip, feeding and accommodation. This additional investment gives a symbolic value to the trail run because is apparently justified by the possibilities of experiencing some "risks", new sensations and natural beauties promoted by the activity in the mountain. This perspective represents a possible explanation about the environmentalist content identified in the research. So, when the runners associate the sport with the concern about nature, the practice receives a new interpretation. Recently, near to the reality studied in this research, at Rio de Janeiro, 2 trail run competitions were created and one of the objectives was to raise funds to protect and conserve parks situated in environmental areas. The examples were: Desafio Corja (2018 and 2019), cooperating with the Parque Estadual da Pedra Branca and Trail Marathon Rio de Janeiro (2019), collaborating with the Parque Nacional da Tijuca.

It is important to point out that because of the analysis made through a sociological perspective, sports activity is re-signified, mainly by means of exchange of capital involved in a specific sociocultural setting, influencing the athlete's performance. We will expand our understanding of the relations between the sociocultural setting and sports performance in the next topic.

SOCIAL-CORPOREAL INDIVIDUALITY, A NEW PRINCIPLE FOR PRACTICE

According to Zatsiorsky et al. (2020), the body's ability to respond to external stimuli and readapting to the environment, is the most important rule for practice. However, because of different anatomic-physiological conformations, each individual can adapt in a personal and singular manner to the same stimulus. This ability is called biological individuality (Zatsiorsky et al., 2020).

An individual's ability to respond to external stimuli, considering genetic, physiological, and anatomic differences, is well-known. Regarding human beings, who also have cultures and values, the response to stimulus will necessarily depend on more than only their biological characteristics. Not only the response, but the stimulus itself, to be carried out with zeal, discipline, and accuracy, also depends on subjective characteristics influenced by beliefs and values, as classical theories on practice also suggest (Zatsiorsky et al., 2020).

Considering the several forms of preparation, including practice, diet, and rest for a professional athlete - and possibly work, family and other activities for amateurs - the argument is that the capacity for self-management to complete these tasks systematically could influence the expected results directly or indirectly.

The present study points to evidence that the categories derived from the data collected seem to directly influence the outstanding performance of the elite athletes we studied. The ability to manage life, placing activities associated to running and races as a priority, stands out decisively for following the pre-established practices and, consequently, reaching the expected results.

Several recent reviews acknowledge the importance of social and cultural aspects in the response to practice (Mujika et al., 2018; Leoni, 2018; Hawley et al., 2018; Afonso et al., 2017; Gabriel and Zierath, 2017; Joyner and Coyle, 2008). Joyner and Coyle (2008) argue that cultural factors may be related to an apparently greater genetic predisposition to physical performance, though they do not present evidence to support this conclusion. Hawley et al. (2018), on the other hand, admit that performance does not depend only on physiology since it involves social and cultural aspects, and that the results

of coaches still surprise scientists, though they do not present any data that justifies this statement.

Based on the evidence raised in the present study, we argue that the studies on practice from a biological perspective do not expand on one of the crucial aspects of performance. To a certain extent, this fact has contributed to a reductionist view of the aspects that influence sports performance. Thus, professionals have directed more attention to biological aspects and very little to the diversity of values related to the context of corporeal practices.

Understanding sports as a culturally connected activity, imbued with meaning and value is to understand that these aspects may be associated to a greater or lesser degree of dedication directed to practice and, therefore, with impacts on performance. In view of this, it is possible to point to the principle of social-corporeal individuality that can be seen as the way each individual incorporates the meanings attributed to practicing a sports activity in a specific social context, and how this influences not only committing to and managing a routine connected to this activity, but also its responses, including sports performance.

In certain moments, the literature does recall the social dimension, but only as a component within the broader biological perspective, by means of the principle of biological individuality (Zatsiorsky et al., 2020). However, to distinguish a concept directed to sociocultural aspects, we can articulate more clearly the complementary dimension that exist between both concepts in the field of sports science or, more specifically, in sports performance. We hope that by evincing the relevance of subjective and cultural aspects in practice more distinctly, these will no longer take on a secondary role and can receive due attention.

Having said that, we suggest that social-corporeal individuality can contribute to guiding the Physical Education professional is their activity, as well as that of other professionals in the health field, aiming at a more human intervention and, thus, that aids not only in the performance-dimension, but also the plural aims of sports.

CONCLUSION

We perceived that the components of a social-cultural order (extra routine, discipline, competitive side, and abnegation) have an influence on commitment, on the level of dedication to practice and on performance of the elite athletes studied. These components were summarized here in the proposal for a new principle of training, social-corporeal individuality. The influence of these and other aspects of a non-biological order need to be further investigated to clarify the possible interferences in practice response.

FUNDING

This work was carried out with the support of the Coordenação de Aperfeiçoamento de Pessoal de Ensino Superior - Brazil (CAPES) - Funding Code 001.

CONFLICTS OF INTEREST

None.

REFERENCES

Afonso J, Nikolaidis PT, Sousa P, Mesquita I. Is empirical research on periodization trustworthy? A comprehensive review of conceptual and methodological issues. J Sports Sci Med. 2017;16(1):27-34. PMid:28344448.

Banbery S, Groves M, Biscomb K. The relationship between exercise dependence and identity reinforcement: a sociological examination of a gym-based environment in the United Kingdom. Sport Soc. 2012;15(9):1242. http://dx.doi.org/10.1080/17430437.2012.690402.

Bauer M, Gaskell G. Qualitative researching with text, image and sound. Thousand Oaks: Sage; 2000.. http://dx.doi.org/10.4135/9781849209731.

Bourdieu P. The forms of capital. In: Richardson J, editor. Handbook of theory and research for the sociology of education. Westport: Greenwood; 1986. p. 241-58.

Bourdieu P. Sociology in question. London: Sage Publications; 1993.

Bourdieu P. Language and symbolic power. Chicago: University of Chicago Press; 1994.

Crossley N. Researching embodiment by way of 'body techniques'. Sociol Rev. 2007;55(1 Suppl.):80-94. http://dx.doi.org/10.1111/j.1467-954X.2007.00694.x.

Daviaux Y, Hintzy F, Samozino P, Horvais N. Effect of using poles on foot–ground kinetics during stance phase in trail running. Eur J Sport Sci. 2013;13(5):468-74. http://dx.doi.org/10.1080/17461391.2012.740505. PMid:24050463.

Davies M, Hungenberg E, Aicher T. The relationship between runner environmental paradigm and their motives to participate in an urban or rural marathon. Int J Event Festiv Manag. 2019;10(1):48-66. http://dx.doi.org/10.1108/IJEFM-02-2018-0013.

Deelen I, Janssen M, Vos S, Kamphuis CBM, Ettema D. Attractive running environments for all? A cross-sectional study on physical environmental characteristics and runners' motives and attitudes, in relation to the experience of the running environment. BMC Public Health. 2019;19(1):366. http://dx.doi.org/10.1186/s12889-019-6676-6. PMid:30940104.

Flick U. An introduction to qualitative research: theory, method and applications. Thousand Oaks: Sage; 1998.

Flick U. Introducing research methodology: a beginner's guide to doing a research project. Thousand Oaks: Sage; 2011.

Gabriel BM, Zierath JR. The limits of exercise physiology: from performance to health. Cell Metab. 2017;25(5):1000-11. http://dx.doi.org/10.1016/j.cmet.2017.04.018. PMid:28467920.

Hawley JA, Lundby C, Cotter JD, Burke LM. Maximizing cellular adaptationto endurance exercise in skeletal muscle. Cell Metab. 2018;27(5):962-76. http://dx.doi.org/10.1016/j.cmet.2018.04.014. PMid:29719234.

Hespanhol LC Jr, van Mechelen W, Verhagen E. Effectiveness of online tailored advice to prevent running-related injuries and promote preventive behaviour in Dutch trail runners:

a pragmatic randomised controlled trial. Br J Sports Med. 2018;52(13):851-8. http://dx.doi.org/10.1136/bjsports-2016-097025. PMid:28855183.

Hockey J, Allen-Collinson J. Digging in: the sociological phenomenology of 'doing endurance' in distance-running. In: Bridel W, Markula P, Denison J, editors. Endurance running: a socio-cultural examination. London: Routledge; 2016. p. 227-42.

IAAF: International Association of Athletics Federations. Competition rules, 2016-2017. Monaco: IAAF; 2015.

Jewell C, Hamill J, von Tscharner V, Boyer KA. Altered multi-muscle coordination patterns in habitual forefoot runners during a prolonged, exhaustive run. Eur J Sport Sci. 2019;19(8):1062-71. http://dx.doi.org/10.1080/17461391.2019.1575912. PMid:30732537.

Joyner MJ, Coyle EF. Endurance exercise performance: the physiology of champions. J Physiol. 2008;586(1):35-44. http://dx.doi.org/10.1113/jphysiol.2007.143834. PMid:17901124.

King S, Weedon G. The nature of the body in sport and physical culture: from bodies and environments to ecological embodiment. Sociol Sport J. 2021;38(2):131-9. http://dx.doi.org/10.1123/ssj.2020-0038.

Le Breton D. Pasiones del riesgo y contacto con la naturaleza. Educ Fis Cienc; 2009;11:13-31.

Leoni MG. Sports and embodiment. Rev Tempos Espaç Educ. 2018;11(25):61-70.

Lima LCR, Nosaka K, Chen TC, Pinto RS, Greco CC, Denadai BS. Decreased running economy is not associated with decreased force production capacity following downhill running in untrained, young men. Eur J Sport Sci. 2021;21(1):84-92. http://dx.doi.org/10.1080/17461391.2020.1727570. PMid:32090683.

Luna JK. The ease of hard work: embodied neoliberalism among rocky mountain fun runners. Qual Sociol. 2019;42(2):251-71. http://dx.doi.org/10.1007/s11133-019-9412-8.

MacBride-Stewart S. Atmospheres, landscapes and nature: off-road runners' experiences of well-being. Health. 2019;23(2):139-57. http://dx.doi.org/10.1177/1363459318785675. PMid:30786767.

Manechini JPV, Aquino R, Moraes C, Tourinho Filho H, Pimenta PM, Puggina EF. Long distance training associated to HIIT protocol does not induce changes in blood biochemical markers in adult marathoners. Rev Bras Ciênc Esporte. 2020;42:e2032. http://dx.doi.org/10.1590/rbce.42.2019.063.

Mauss M. Sociology and psychology. London: Routledge & Kegan Paul; 1979.

Mo S, Chan Z, Lai K, Chan PP, Wei RX, Yung PS, et al. Effect of minimalist and maximalist shoes on impact loading and footstrike pattern in habitual rearfoot strike trail runners: an in-field study. Eur J Sport Sci. 2021;21(2):183-91. http://dx.doi.org/10.1080/17461391.2020.1738559. PMid:32126931.

Mujika I, Halson S, Burke LM, Balagué G, Farrow D. An integrated, multifactorial approach to periodization for optimal performance in individual and team sports. Int J Sports Physiol Perform. 2018;13(5):538-61. http://dx.doi.org/10.1123/ijspp.2018-0093. PMid:29848161.

O'Brien W, Riot C, Minahan C. International high-performance sport camps and the development of emplaced physical capital among pasifika athletes. Sociol Sport J. 2021;38(4):367-75. http://dx.doi.org/10.1123/ssj.2020-0040.

Pope C, Mays N, editors. Qualitative research in health care. Massassuchets: Blackwell Publishing Ltd; 2006. http://dx.doi.org/10.1002/9780470750841.

Qviström M. The nature of running: On embedded landscape ideals in leisureplanning. Urban Urban Green. 2016;17(1):202-10. http://dx.doi.org/10.1016/j.ufug.2016.04.012.

Shilling C. The body and physical capital. In: Shilling C, editor. The body and social theory. Londres: Sage; 2005, p. 111-30.

Shipway R, Holloway I. Running free: Embracing a healthy lifestyle through distance running. Perspect Public Health. 2010;130(6):270-6. http://dx.doi.org/10.1177/1757913910379191. PMid:21213563.

Skinner S. Mothering, running, and the renegotiation of running identity. Qual Sociol Rev. 2015;11(3):18-39. http://dx.doi.org/10.18778/1733-8077.11.3.03.

Smith W. Science and myth: what we are never told. San Rafael: Sophia Perennis; 2010.

Smith W. The quantum enigma: Finding the hidden key. Hillsdale: Sophia Perennis; 2005.

Vercruyssen F, Easthope C, Bernard T, Hausswirth C, Bieuzen F, Gruet M, et al. The influence of wearing compression stockings on performance indicators and physiological responses following a prolonged trail running exercise. Eur J Sport Sci. 2014;14(2):144-50. http://dx.doi.org/10.1080/17461391.2012.730062. PMid:24533521.

Wacquant LJ. Body & soul. Oxford: Oxford University Press; 2004.

Wainwright SP, Turner BS. Reflections on embodiment and vulnerability. Med Humanit. 2003;29(1):4-7. http://dx.doi.org/10.1136/mh.29.1.4. PMid:23671166.

Weir G, Wyatt H, van Emmerik R, Trudeau MB, Willwacher S, Brüggemann GP, et al. Influence of neutral and stability athletic footwear on lower extremity coordination variability during a prolonged treadmill run in male rearfoot runners. Eur J Sport Sci. 2020;20(6):776-82. http://dx.doi.org/10.1080/17461391.2019.1670867. PMid:31543009.

Zatsiorsky VM, Kraemer WJ, Fry AC. Science and practice of strength training. Champaign: Human Kinetics; 2020.