

## Swimming and menstruation: a qualitative study in elite female swimmers

*Nadar con la menstruación: un estudio cualitativo en nadadoras de élite*

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### Abstract

**Introduction:** Menstruation in athletes, from a qualitative approach, is an underexplored phenomenon.

**Objective:** To describe the experience of elite swimmers from a sports league in Bogotá D.C. regarding menstruation and their sports practice.

**Materials and methods:** Qualitative descriptive study based on in-depth interviews administered to nine swimmers aged between 18 and 29 years, who were enrolled in the following categories: swimming races, water polo and open water swimming. The interviews were transcribed and processed using NVivoPro®.

**Results:** All participants reported swimming while on their menstrual periods. For them, menstruation is a serious issue that affects their performance and well-being. The most relevant difficulties reported include the need to conceal and restrict it; psychological symptoms such as depression, and physical symptoms such as cramps; the lack of empathy from some coaches; the limited information these athletes receive from health personnel on menstrual physiology and menstrual hygiene management, and the lack of knowledge on alternative menstruation management methods such as the menstrual cup. Positive aspects include the support received by their peers and female coaches, who make them feel understood as women.

**Conclusions:** Menstruation has an impact on the well-being and performance of elite female swimmers. Therefore, the physiological, psychological, and social implications of women involved in professional sports should be addressed to provide better support to these athletes, as this will contribute to improving their quality of life and overall health condition.

**Keywords:** Menstruation; Swimming; Sexual Health; Qualitative Research (MeSH).

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### Resumen

**Introducción.** La menstruación en atletas es un fenómeno poco explorado desde una mirada cualitativa.

**Objetivo.** Describir la experiencia de nadadoras de élite de una liga deportiva de Bogotá D.C. en relación con la menstruación y su práctica deportiva.

**Materiales y métodos.** Estudio cualitativo descriptivo basado en entrevistas a profundidad. Participaron 9 nadadoras entre 18 y 29 años de las modalidades natación carreras, waterpolo y natación en aguas abiertas. Las entrevistas se transcribieron y se procesaron con el programa NVivoPro®.

**Resultados.** Todas las participantes reportaron nadar durante su menstruación. Para ellas, la menstruación representa un serio problema que afecta su bienestar en la práctica de este deporte. Las principales dificultades descritas fueron la necesidad de ocultarla y restringirla; los síntomas psicológicos como la depresión y físicos como los cólicos; la poca empatía de algunos entrenadores; la escasa información que reciben por parte del personal de salud sobre la fisiología y manejo de la higiene menstrual, y el desconocimiento de métodos alternativos de manejo como la copa menstrual. Como aspecto positivo se reportó el apoyo de sus pares y entrenadoras, lo que hace que se sientan comprendidas en su condición de mujeres.

**Conclusiones.** La menstruación es una condición que afecta el bienestar y desempeño de las nadadoras de élite, por lo tanto es necesario que sus implicaciones fisiológicas, psicológicas y sociales sean reconocidas en escenarios de alto rendimiento deportivo para brindar un mejor apoyo a estas atletas, lo que contribuirá a mejorar su calidad de vida y salud integral en general.

**Palabras clave:** Menstruación; Natación; Salud sexual; Investigación cualitativa (DeCS).

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## Introduction

Menstruation is a biological process with cultural and social meaning, often negative,<sup>1,2</sup> that plays an important role in the construction of the female identity and body image.<sup>3</sup> The effects of menstruation on physical and mental health, and on sexuality, as well as the perceived limitations it imposes on spare time, are part of the situations to which women are exposed during this stage.<sup>4</sup> In spite of its relevance, menstruation is a subject that is little considered in scientific spheres, perhaps due to factors such as the silence that women keep about everything it implies or the little education they have about it.<sup>5</sup>

Women have competed in the Olympic Games since 1900,<sup>6</sup> and from then on, their participation has increased, so much so that for the 2016 Rio Olympics, they represented 45% of the competitors.<sup>7</sup> However, it should be noted that women's sport performance differs from that of men for biological, psychosocial, and cultural reasons related to the sports environment.<sup>8-10</sup>

In Colombia, Konovalova & Rivera-Echeverry<sup>11</sup> report that more than 91% of female athletes compete and train while they are on their period. On the other hand, Maturín-López & Landázuri-Munares<sup>12</sup> describe that 24.8% of the analyzed athletes perceived they had a worse physical performance, while 13% felt that their performance was better. The latter finding could be related to the fact that the athletes perceive an increase in flexibility, as stated by Prado-Seoane.<sup>13</sup> During the premenstrual and menstrual phases, the levels of estrogens and progesterins decrease, producing psychological changes such as depression and irritability, and physical discomforts such as breast tension and abdominal pain, which negatively affect sports performance.<sup>14-16</sup>

Regarding the regularity of the menstrual cycle, no alterations have been found in elite swimmers.<sup>17,18</sup> However, Coste *et al.*<sup>19</sup> found that in this population there is a relationship between highly demanding training sessions and increased energy expenditure, on the one hand, and the increase in cases of hyperandrogenism (polycystic ovarian syndrome), on the other.

Using oral contraceptives is common among sports women so that their periods do not coincide with competitions since they consider that during those days, they must deal with pain and the discomfort its treatment implies;<sup>20</sup> besides, if bleeding is controlled, anxiety diminishes.<sup>21-23</sup>

Menstruation, from the experience of female athletes, has been little studied. Some of the few investigations on this subject were carried out by Moreno-Black & Valianatos,<sup>24</sup> who found that the participants in their study felt uneasy about the possibility of having their clothes stained with blood and that their sanitary pads would "notice." In turn, Suee-Held<sup>25</sup> showed that female athletes are concerned about the perception that their male counterparts have on menstruation and that they fear using tampons during competitions because leaks could occur, and the string can be exposed.

Menstruation affects swimmers in a particular way, so their experience needs to be analyzed in a specific way. In this sense, the objective of this research was to describe the experience of a group of elite female swimmers belonging to a sports league in Bogotá D.C., Colombia, with respect to menstruation and its impact on sports practice.

## Materials and methods

This is a qualitative study with a descriptive phenomenological approach, in which the experience of female swimmers concerning menstruation and sports practice was analyzed.<sup>26,27</sup>

In-depth interviews were conducted<sup>28,29</sup> to ask questions about the menstrual education received, experience of menarche, menstrual hygiene methods (MHM) used, experiences with menstruation in the sports environment, pain management, and possible solutions to difficulties. The interview script was reviewed by an expert and subjected to a pilot test with a senior female swimmer and a junior female swimmer.

The criteria for inclusion were women swimmers in the senior category (between 18 and 29 years old) who belonged to a sports league in Bogotá D.C. and carried out more than three training sessions per week. Given the characteristics of the study and the subject matter to be explored, the sample was defined using the snowball strategy, a non-probabilistic sampling technique in which existing study subjects provide referrals to recruit future subjects,<sup>30</sup> that is, qualified persons are asked to identify individuals or groups with special knowledge of the phenomenon;<sup>26,31</sup> this is a very useful strategy to access groups that are difficult to reach or when participants do not want to expose themselves publicly.

Three coaches were contacted through the Bogotá Swimming League to select the participants, referring the first three; they, in turn, helped to contact other swimmers. Data collection was stopped when the content saturation criteria were reached; consequently, nine swimmers were included in the final sample, three for each modality: swimming races, water polo, and open water swimming. Swimmers from three different modalities were included to control bias.

The interviews lasted two hours, were carried out in non-sporting places according to the participants' time and availability, and were carried out by the principal researcher, who had no previous contact with the interviewees. The interviews were recorded and transcribed verbatim. The obtained narrations were entered in text into the NVivo Pro® program to facilitate the work and ensure transparency between the coding work and the information analysis.

The thematic analysis was done following the Giorgi's method for phenomenological studies, which seeks to describe the experiences of the interviewees.<sup>32</sup> Each emerging theme was contrasted with relevant literature and illustrated with quotes from participants.

As per Mora,<sup>29</sup> criteria of credibility were applied, on the one hand, by supporting the analysis of the narrative material obtained and comparing the findings with those reported by other authors. Furthermore, criteria of confirmability were applied by practicing the reflexivity inherent to the agreement between researchers with different professional backgrounds and by receiving feedback from the participants on the results.

The narratives were ordered within the units of meaning identified from the objectives of the study and categorized according to the main axes of meaning; likewise, the descriptions were compared and contrasted to later recognize units with common meanings.<sup>30</sup> Each participant was given a pseudonym to preserve their identity when quoting them.

This research followed the ethical principles for medical research in humans stipulated in the Declaration of Helsinki 2013<sup>33</sup> and was considered of minimal risk according to the Resolution 8430 of 1993 of the Ministry of Health of Colombia.<sup>34</sup> The interviewees read and signed the informed consent. The Research Ethics Committee of the University El Bosque approved this work through Minutes No. 005-2017 of March 23, 2017. The confidentiality and anonymity of the data and the protection of the privacy and identity of the participants were guaranteed.<sup>35</sup>

## Results

The results were arranged into six main themes: characterization of the participants, experience of menarche, MHM, accidents and leaks, physical discomfort of menstruation, and solutions given by the participants. They are described below.

### Characterization of the participants

Table 1 shows the characteristics of the participants of the study: pseudonym assigned, age, educational attainment, modality practiced, and age at which they started practicing the sport.

**Table 1.** Characterization of the participants.

Pseudonym	Age	Education attainment	Sports modality	Age of initiation of sports practice
Ana	19 years	Fourth semester of higher education	Swimming races	10 years
Valeria	21 years	Fifth semester of higher education	Swimming races	5 years
Violeta	18 years	First semester of higher education	Swimming races	9 years
Sofía	23 years	Seventh semester of higher education	Water polo	13 years
Natalia	22 years	Sixth semester of higher education	Water polo	13 years
Camila	21 years	Ninth semester of higher education	Water polo	11 years
Juliana	27 years	University graduate	Open water swimming	9 years
Lorena	22 years	Fourth semester of higher education	Open water swimming	9 years
Antonia	18 years	Fifth semester of higher education	Open water swimming	9 years

Source: Own elaboration.

The age range of the participating swimmers was between 18 and 27 years old, with a median of 21 years; on average, the interviewees had practiced swimming for more than 9 years, and their starting age in this sport was between 5 and 13 years, with a median of 9 years. Only one interviewee had graduated from the university; the others were university students.

### Experience of menarche

Table 2 presents the general aspects of menstruation in the participants: age of menarche, presence of dysmenorrhea, presence of menstrual irregularities and MHM.

**Table 2.** General aspects of menstruation in the participants.

Case	Age of menarche	Dysmenorrhea	Irregularities	MHM
Ana	12 years	Yes	None	Tampon
Valeria	11 years	Yes	None	None
Violeta	14 years	Yes	None	None
Sofía	13 years	No	None	Tampon
Natalia	12 years	Yes	Oligomenorrhea	Tampon
Camila	12 years	Yes	Amenorrhea	None
Juliana	12 years	Yes	Amenorrhea	Tampon
Lorena	12 years	Yes	Amenorrhea	Tampon
Antonia	9 years	Yes	None	Tampon

MHM: menstrual hygiene methods.

Source: Own elaboration.

The interviewees had their menarche between 9 and 14 years of age, with an average age of 11.8 years, and all began their sporting life before this event. Although the athletes had received information about the menstrual period in their homes and schools, they experienced fear and surprise when they had their first menstruation: "You never know what's going on, so it freaks you out, I realized I was bleeding" (Violeta). Likewise, there was evidence of grief because they left their childhood state and had to face the changes inherent to the reproductive life: "I went to the bathroom, I got sad [...] we have to deal with (sic) the rest of our lives" (Natalia).

### Menstrual hygiene methods

When the participants were asked about the MHM they used to train or compete, it was found that those who practiced swimming races did not use any, while the water polo and open water swimmers used tampons. None of the athletes had used the menstrual cup and only one knew of its existence.

One of the reasons for not using any MHM was that they were told so, as stated by one of the interviewees: "My coach said that swimming stops the flow. I don't have it while I am swimming" (Antonia). Moreover, the fear of using tampons was evident: "Tampons scare me because of the things that have been said about them, many myths. I do not use them" (Violeta). Similarly, among the girls that used this method, it was found that Natalia, a water polo player, stated that it is unsafe after a while: "I spent a lot of time during tournaments in the pool, I was three, four, five hours in the water and when I came out of the pool I had a stream of blood on

my leg; it was terrible". The other five tampon users reported feeling greater security during their period while practicing sports with this method: "Now I swim with tampons. I love them" (Ana).

Menstrual flow is considered an unpleasant substance that defies physical and social limits and puts the emotional stability and identity of swimmers at risk, which is why MHM are required to ensure safety and protection.

### Accidents and leaks

Menstruation is a private matter for swimmers, and it is a topic that is not discussed within the social or sports sphere. The fear of having "accidents" or leaks was present in the narratives of eight interviewees, who stated that the menstrual period interferes with their peace of mind and sports performance. The clinical signs and symptoms of menstruation must remain hidden, making it a process that challenges the distinction between public and private matters. The interviewees think that a menstruating woman should be discreet to avoid being exposed to shame, which is greater in the presence of men. Furthermore, they emphasize that it is more difficult for them to take care of themselves when they are in a bathing suit because this situation leaves them more exposed: "When it's time to compete, it must go unnoticed because it would be really embarrassing that people realized that I'm menstruating" (Violeta).

### Physical discomfort during menstruation

All the interviewees consider menstruation as a problem in the sports environment: there is a menstruation-discomfort-aversion concept in which this process is seen as an impediment to swim: "I think that menstruation is what bothers us the most because it is a bad thing. I am prepared for the competition and then I have my period. It is a blow for me as an athlete" (Natalia).

The need to overcome the physical discomfort derived from the menstrual period is part of the female experience, especially in competitive sports, as it has more significant repercussions since athletes must maintain intense physical activity despite feeling pain, fatigue, and nuisance. One of the interviewed swimmers referred to this issue and said that it is a situation that affects performance: "In sports it is the most complex issue. We prepare and then the period comes. We feel tired, slower, heavier, with a lot of discomfort" (Natalia).

Cramps are the main physical discomfort experienced during menstruation; it was reported by eight of the interviewees, being a constant problem: "Lots of cramps, always" (Juliana). To treat this symptom, six interviewees reported using antispasmodic medications, the best option to reduce pain and be able to continue with the competition: "Swallowing pills, I have to take a lot" (Juliana).

Menstruation affects the physical and mental state of female athletes, reducing their sports performance. In this regard, the participants reported that there is a significant lack of understanding of this situation, for example, on the part of the coaches, who are not empathic: "Swimming with cramps, waist pain, leg pain. The coach says, 'Do it, it will go away if you swim. That's a big lie. It gets worse. All the coaches plot it'" (Lorena).

In order to modify the menstrual cycle so that it does not coincide with sports competitions, two swimmers reported using oral contraceptives following medical indications: "They made us take birth control pills to extend the cycle" (Juliana).

When analyzing the presence of menstrual cycle alterations, four interviewees said they had irregular cycles at some point in their life and three reported having periods of amenorrhea that were not related to sports activity. These swimmers, even though they know the anorexia-amenorrhea-osteoporosis triad, said that they did not have their periods because of changes of location and the climate: "I did not have it for nine months and I had no risk of pregnancy. According to the doctors, it happened because the climate changed" (Juliana).

On the other hand, four participants perceived menstruation as positive for sports performance, specifically in terms of increased speed: "With menstruation, performance improves. Sometimes, when I menstruate during a competition, I sometimes do better than when I'm not" (Violeta).

### Solutions proposed by the participants

The interviewees stated that it is necessary to change how menstruation is perceived from the beginning of sports life. Since the main perceived problems are lack of knowledge and discomfort, they proposed that health professionals carry out educational processes that fit their experiences and concerns: "Medical training, learn about other methods to avoid accidents. Girls have to be trained from a young age, make recommendations [...] I learned from a senior" (Violeta). They also said that trainings should address alternative methods: "I recently heard that there was a method different from the usual ones, which is menstrual cups. It seems good to me because it will change my life, it will give me more security" (Natalia). Finally, they asked for the development of an institutional guideline for coaches with information on women's issues: "Guidelines for male coaches" (Lorena).

Similarly, the interviews showed their desire to make the sports environment better for female athletes and having more women coaches hired for this job: "Women should be given the opportunity. They will understand the menstrual cycle and that would allow us to have a better sports and personal life" (Camila). The desire of having female health personnel available was also evident: "A female sports doctor, that would be the best. Because with a man you do not feel confident enough to talk about these issues. It is easier with a woman" (Juliana).

### Discussion

This study describes the perceptions of a group of elite female swimmers regarding how they experience menstruation while training or competing. For this group of athletes, as for Beauvoir,<sup>36</sup> menstruation is a biological process that limits women's freedom and its clinical signs and symptoms have implications at the physical and emotional level; it also reflects social and cultural prejudices. As described by Ortega *et al.*,<sup>37</sup> the shame reported by the interviewees, together with the need to hide their periods from coaches and male counterparts, is

related to the ancestral rejection of menstruation, which, according to Nussbaum,<sup>38</sup> is tied to a misogynist culture that considers the feminine as shameful and the woman's body and its fluids as repugnant and close to animality.

Menstruation is a subject with little visibility in sports medicine. This may be because, according to Costello *et al.*,<sup>39</sup> only 39% of studies in sports medicine have been conducted on female athletes and many of them probably do not address this physiological process. Likewise, menstruation in the analyzed population is endowed with negative social and cultural meanings, which is consistent with what was stated by Brantelid *et al.*<sup>40</sup> and Lamborn.<sup>41</sup> In addition, the results suggest that issues related to the menstrual experience are ignored, thus hindering the approach to women's health in a comprehensive manner, as stated by Valls-Llobet.<sup>42</sup>

Menarche in the participants occurred at an age similar to the Colombian average (between 11.3 and 12.7 years);<sup>11,43</sup> before this event, the swimmers experienced the same feelings of uncertainty described by González & Montero.<sup>44</sup> This could be explained by the fact that, despite advances in sex education, young women still perceive the arrival of the first menstruation as a strange and unexpected situation, and it is generally associated with the end of childhood and the beginning of fertile life.<sup>45</sup>

Menstruation as an impediment, according to Rodríguez-White,<sup>46</sup> is a concept reinforced by the menstruation-discomfort-aversion triad that entails the idea of denying any impact that menstruation may have and reinforces negative attitudes in the imaginary. Similarly, according to Puyana-Villamizar,<sup>45</sup> this situation, is related to suffering, dirtiness, and concealment.

Menstruation can alter sporting performance, not only because women feel the need to hide it, but because it causes physical and psychological symptoms and the discomfort derived from handling them.<sup>24,25,47</sup> For Young,<sup>48</sup> menstrual blood is a fluid that challenges physical and social boundaries, and when women menstruate they risk losing their emotional stability (normality), so swimmers demand MHM to ensure their safety and protection. Regarding these methods, it was found that using tampons made the interviewed swimmers feel more secure, although they were cautious when they had to stay underwater for a long time because there is a great risk of blood leaking out when coming out of the water.<sup>49</sup>

The knowledge of MHM is limited to the traditional ones: only one participant knew about the menstrual cup and although she had not used it, she had the perception that it was safer. Several authors have presented studies on this particular issue and on the fears and benefits of using different methods.<sup>50-56</sup>

Young women trust those who live and understand female processes (other female swimmers, coaches, and health staff). This situation, reported by Fernandez-Olguin,<sup>57</sup> allows us to understand why blood leaks in front of men are embarrassing for female athletes.

The physical experience is related to pain, tiredness, and discomfort. In this respect, Konovalova & Rivera-Echeverry<sup>58</sup> found that Colombian sportswomen suffer from abdominal pain, mastalgia, lumbago and general malaise during their periods. In the present study, six interviewees said that menstruation limits their performance, while three claimed to have better results in

terms of speed; this coincides with what was reported by Prado-Seoane.<sup>13</sup>

Menstrual irregularities such as oligomenorrhea and amenorrhea, although present, were not of concern to participants as they were attributed to environmental factors. Other studies, such as Mountjoy *et al.*,<sup>59</sup> Humphrey,<sup>60</sup> Weiss-Kelly & Hecht<sup>51</sup> and Ranson *et al.*,<sup>62</sup> do not directly correlate high performance sports to menstrual irregularities, but associate them with other factors involved such as increased energy expenditure and caloric restriction, which cause hormonal changes.

The little attention paid to the menstrual period in the sports environment and the scarce empathy that some coaches have for the participants regarding their clinical signs and symptoms make it necessary to have a better understanding of this phenomenon. This, added to the scarce information that swimmers receive,<sup>58</sup> makes the female experience more difficult and produces psychological and social insecurities, so it can be said that menstruation education helps female athletes.<sup>63</sup>

The group of swimmers interviewed suggested the implementation of comprehensive sex education policies tailored to their experiences and concerns. As stated by Chrisler *et al.*,<sup>3</sup> and Britton,<sup>64</sup> this process requires including issues such as the concept of secrecy, social isolation, safe handling of MHM, and the benefits and negative effects of menstruation. Other recommendations for the formulation of these policies include pain management, access to modern MHM, reducing the stigma of menstruation, and educating colleagues, coaches, and family members to provide support, as proposed by Bobel.<sup>4</sup>

## Conclusions

While significant progress has been made regarding women's equality in sports, it is important to build more spaces for equity. Menstruation is a physiological process organized and interpreted in a social and cultural way that has a specific impact on the sports environment and on the quality of life of female athletes. Specifically, the problems faced by female swimmers are related to physical aspects (menstrual cramps and back pain), psychological aspects (depression and irritability) and social aspects (concern about keeping menstruation hidden). Therefore, these issues must be addressed by health professionals, coaches, and family members to provide comprehensive care to women from the beginning of their sporting career.

There is a gap in knowledge about menstrual physiology, MHM and their alternatives, and treatment of cramps and other associated symptoms that impact sports performance. Participants perceive that in the sports environment more importance is given to their performance than to their overall well-being, which is why more guidance and support is needed.

Based on the testimonies of the interviewed female swimmers, it could be said that it is necessary to improve the perception of menstruation in the sports environment, recognizing its biological, psychological and social implications, and thus help athletes in general to lead a fuller and more satisfactory life.

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## Conflicts of interests

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