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Exploring the changes of physical education in the age of Covid-19

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ABSTRACT

Background: Physical education (PE) has been traditionally considered as a practical and ‘hands-on’ subject in schools, where close proximity and physical contact is common, particularly in Spain which has a high proximity culture. Significantly, the delivery of PE has changed because of the Covid-19 pandemic, and this brings significant consequences for preservice PE teachers.

Purpose: The aim of the paper is to explore the changes of PE during Covid-19 and the effects on pre-service teachers.

Methods: Semi-structured interviews were used to produce data with a group of 12 preservice PE teachers from Spain (four women and eight men) who were undertaking their practicum in PE when the Covid-19 lockdown was imposed in Spain [14 March 2020]. Dredging was used as an analytical technique to identify the relations and affects that comprised assemblages of bodies, things and social formations.

Findings: Results suggest that preservice teachers are having difficulties in re-assembling PE in the age of Covid-19, and that this produces the affects of precarity, fear and insecurity. Furthermore, the PE re-assemblage also results in a shift of pedagogical affects. The participants particularly struggled to think on a PE assemblage that does not include the affect of physical encounters with their students. The new assemblage of PE also included encounters with digital technologies, which allowed for particular openings and closings for a re-alignment into the shifted PE.

Conclusions: Pre-service teachers were unfamiliar with the way the PE assemblage has shifted, and this shifting affected their ability to produce affects in the ‘new PE’. The new PE assemblage leads to a significant change in the culture of PE teaching in Spain, where physical contact between teachers and students was previously normal and taken for granted.

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Introduction

The emergence of Covid-19 has meant innumerable changes in the educational arena (Sá and Serpa 2020). The pandemic has led to the implementation of protocols that has changed how teachers teach and communicate with students and families. This situation makes it necessary to rethink education and, particularly, Physical Education (PE; González Calvo et al. 2020a). PE has been

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claimed to be socially constructed, that is, defined by what is said, written and done in its name (Kirk 2010). Historical records have also demonstrated how the subject has changed through time and its condition of temporality (Kirk et al. 1996). PE is practised in particular places and at specific times (Kirk 2010), and therefore, the emergence of Covid-19 has represented a need to analyse the changes of PE. Preservice teachers are educated into a traditional delivery of PE and therefore, now they struggle to teach PE given the massive changes and lack of governmental guidance during the pandemic.

PE has been traditionally considered as a practical and ‘hands-on’ subject in schools, where close proximity and physical contact is common. Significantly, the delivery of PE has shifted to fully online in Spain because of the ongoing Covid-19 pandemic, and this may bring significant consequences for preservice PE teachers. A few years ago, Gard and Pluim (2014) cautioned us about the impacts of a shift to digital PE, and this seems to be occurring (intended or unintended) in different places mainly because of the conditions brought on by the pandemic. However, Spain has remained hesitant to use digital technologies for the delivery of PE and has a more traditional and hands-on approach (Varea and González-Calvo 2020a). This is because, as demonstrated elsewhere (see Varea, González-Calvo, and Martínez-Álvarez 2018), Spain has a more touch-oriented culture than other Anglo-Saxon, Scandinavian or Asian countries.

As of today (25 August 2020) there are no clear policies in Spain regarding what should be done and what teachers should do in the classroom before classes restart after summer holidays in less than one month. There are already rumours suggesting an indefinite strike until the government establishes guidelines that guarantee a safe return to the classrooms. However, it has been implied that it will be up to each school to decide how they will deal with the return to the classrooms, and this may be particularly problematic for PE.

The aim of the paper is to explore the changes of PE during Covid-19 and the effects on pre-service teachers. The specific research question that guided our investigation was: ‘How is PE re-assembled during Covid-19 and what are the affects produced?’

Assembling PE

Deleuze and Guattari’s (1987) term of assemblage makes reference to the interconnected multiplicities that coalesce to produce flows of force. Therefore, the nature of the assemblage is always under construction and in continuous change. The use of assemblage is becoming more popular in the field of PE and sport pedagogy. For example, Landi (2018) used this concept to reflect on his affective experiences as a queer male physical educator. He also considered research methods as an assemblage to investigate the affects of PE on queer men (Landi 2019). Safron (2019) used an affective lens of Deleuze and Guattari (1987) to reimagine what ‘matters’ for education research and pedagogical practices in health, fitness and physical culture through a health and fitness scrapbooking project among Black and Latinx youth.

Similarly, Hordvik, MacPhail, and Tore Ronglan (2019) used the term assemblage to study how preservice teachers negotiate their Sport Education PE teacher education learning experience during practicum. Even the field of PE has been claimed to be an assemblage per se, as it is comprised of epistemological (usually science-based), material (humans, gym equipment, etc.) and subjective (gender, ethnicity, etc.) bodies (Landi 2018). Significantly, viruses (such as Covid-19) have also been considered assemblages of biological matter, discourses and power relations (Bury 1986; Conrad and Barker 2010).

In previous research (see González-Calvo, Varea, and Martínez-Álvarez 2019), we have used Deleuze and Guattari’s (1987) concept of assemblage to study how preservice PE teachers’ bodies can be considered as the action of multiple components coming together (DeLanda 2016) through relationships with other bodies, things and ideas. In so doing, bodies are processual and unpredictable, and the connections between bodies and the world significant, as they define the capacities for

action. Thus, this perspective emphasised the body as becoming – that is constantly changing – because it is produced and affected by its continuous connections with the world (Deleuze 1992).

The concept of assemblage has been used mainly to research topics directly related to the body and how it creates relations with other bodies engaging in movement and rest (Markula 2008). However, for this paper, we extend the use of assemblage to include other things, discourses and ideals related to the PE profession, and how they affect and are affected by the teacher's and students' bodies. In this sense, we investigate how PE is being re-assembled in light of the significant changes being brought on by Covid-19.

Deleuze's (1992) framework of becoming proposes that all things, bodies and matter continually connect. Assemblages require 'external' bodies (material, non-material, etc.) in constant interaction to assemble and re-assemble into new formations. This approach places importance on the concepts and production with which the body engages, including discourses, affects, ideals, norms, practices, institutions, other bodies and objects (Coffey 2016). Relational connections are thus made between the actors in assemblages; together, affects and connections generate agential capacities that work to open or close off specific responses and actions (Lupton 2019).

Agency, understood as a collective force materially produced through the body's relation with multiple entities (Coffey 2016), is then a continuous amalgam of forces deriving from the continuous folding of multiple bodies (knowledge, material, subjective; Landi 2018). Bennett (2010) referred to 'the agentic assemblage' as how 'things' act with a force that it is not just possessed by a person. Rather, the assemblage itself of the material and non-material acts, blocks flows, makes cuts, and produces intensities in a distributed agency (Mazzei and Jackson 2017). In so doing, 'agency is everywhere' (Hekman 2010, 123) and constituted as an enactment (Mazzei and Jackson 2017). Following Bennett (2010), '[a] lot happens to the concept of agency once nonhuman things are figured less as social constructions and more as actors, and once humans themselves are assessed not as autonyms but as vital materialities' (21). Therefore, agency is distributed across multiple bodies and not bound to a single human body.

Relational connections can thus be established between humans and nonhumans, or what Bennett (2004) has called 'thing-power' to describe the vital power of human–nonhuman assemblages. Thing-power is a dynamic flow of energy between the different components of assemblages which generates affective forces. These assemblages produce agency, including the ability to create effects and affects that can be enabling or disabling (Lupton 2019). In this sense, while we expose the difficulties that preservice PE teachers have been through when they were suddenly requested to change their teaching to fully online, we also highlight how this shift enables re-assemblages with multiple agentic capacities, that is the opportunity for closings and openings.

Methods

Participants and context

Participants for this study were a group of 12 preservice PE teachers from Spain (four women and eight men) who were undertaking their practicum in PE when the Covid-19 lockdown was imposed in Spain. Participants were aged between 22 and 24 years old, and they were all born in Spain. Their parents were also born in Spain, with the exception of two parents who came from Bulgaria and Romania. Participants were asked about their future aspirations as PE teachers, and some of their intentions included to continue with postgraduate studies and to travel abroad to improve their English skills.

Ethical approval was obtained through the university. Participants signed consent letters prior to participation and all names used in this paper are pseudonyms to ensure anonymity in the reporting of results. Participants were in the last year of their teaching degree programme (fourth year) and were undertaking their second practicum. This final practicum was supposed to last for 12 weeks, with the preservice teachers required to teach face-to-face PE classes in schools.

On 14 March 2020, the Spanish government declared a state of emergency and the country went into lockdown, initially for 15 days. The lockdown was then extended further on multiple occasions. This decision involved the cessation of all face-to-face educational activities at all educational levels and institutions, and 13 March 2020 was the last day of school and university classes before summer holidays. Since all face-to-face classes have been suspended in Spain since 13 March 2020, all educational actors have had to switch their classes to online mode. As a consequence, these preservice teachers also had to undertake their PE practicum online. They had online contact with both the university tutor and the teachers and students from schools. They were requested to prepare videos, tutorials, physical activities and other activities, so that school students could work on them from their homes.

Data production

Participant-produced drawings and semi-structured interviews were used to generate data (Tinning and Fitzpatrick 2012) for the overall project, which aims to investigate students' and preservice teachers' PE experiences during Covid-19 pandemic. This paper presents results produced through the interviews with preservice teachers only. Semi-structured interviews were conducted with the participants, each lasting between 60 and 90 min. The interviews were audio-recorded and transcribed verbatim. Although questions were used to guide the dialogue, the interviews were largely conversational in style (Hedrick, Haden, and Ornstein 2009). Gustavo conducted the interviews online, given the current situation of lockdown in Spain. He acted as an 'active listener', seeking further details where relevant (Smith 2010) and guiding the conversation. Participants were asked to comment on their perceptions and experiences about the meaning of PE during the Covid-19 pandemic, the pros and cons of online PE teaching, and their preferences and fears.

Data analysis

Data analysis was guided by our specific aims and theoretical perspective. The analysis took place in three overarching phases. In phase 1, all transcripts and notes were read through to identify key segments of data that were representative of the main emerging themes. In phase 2, the main themes were analysed in detail using the key tenets of the theoretical approach described above. For example, particular attention was given to the assemblage of participants and their encounters with technology. In phase 3, the dredging of data took place.

Dredging is a systematic method that can be used 'to identify the relations and affects that comprise assemblages of bodies, things and social formations within a specific event [Covid-19 lockdown], and also to assess the [agential] capacities that emerge from this assemblage' (Fox and Alldred 2017, 172). Dredging requires an in-depth reading of and familiarisation with all data sources (e.g. interviews transcripts, observation notes, documents, survey data) and piecing together the relations they have between each other (Landi 2019). Dredging emphasises the articulations between abstract and material entities of both human and nonhuman (Fox and Alldred 2017). This method also allows researchers to explore 'what bodies and things in assemblages can do, and what limits and opportunities for action are available within an event' (Fox and Alldred 2017, 172), such as in this case, the opportunities for action available through the delivery of PE during and after the Covid-19 pandemic.

Data were analysed by all three researchers. A first round of analysis was carried out by Gustavo, then Alfonso and Valeria analysed the data. Afterwards, all three researchers analysed the data together and compared similarities and differences in the identification of the main themes and representative quotes. Then, Valeria conducted the dredging of the data and Gustavo and Alfonso provided suggestions. This analysis of the data by the three researchers, together with our different areas of expertise, assisted to achieve trustworthiness in the process. We are also aware that our research will always be influenced by our subjectivities and positionalities (Fisher 2015). Valeria

lives in Sweden, where restrictions on everyday life and delivery of PE have been minimal in relation to Covid-19. Almost no lockdown has been implemented in Sweden, and children continued attending school and PE classes almost on a regular basis until the age of 15. On the contrary, Gustavo and Alfonso live in Spain, where the government decided to implement an extreme lockdown, suspending face-to-face school and university classes. In this way, we are aware that our ‘everyday assemblages’ are different according to the different situation that we are living, and our opportunities to interact with other people, discourses and entities are vastly different. Three main themes were constructed from the data and are presented below: (1) Re-assembling PE in the age of Covid-19, (2) The affects of re-assembling PE: Precarity, fear, and insecurity, and (3) PE Re-assemblage: pedagogical affects.

Results and discussion

Re-assembling PE in the age of Covid-19

The PE assemblage has changed due to Covid-19. The pandemic has had a number of affects on the traditional delivery of the subject. The participants viewed the changes undergoing in PE as a threat based on multiple perspectives. Sandro, for example, claimed that the nature of PE activities may be different in the future:

I think many teachers will now propose more individual than group exercises or cooperative activities in the classes. This will be easier, and the individual activities will limit physical contact. They [students] won't learn from each other, or if they do, it'll be respecting their distance. (Sandro)

Sandro's comment shows that group activities were part of the traditional assemblage of PE and that this entity is now ‘at risk’ because of the increased personal space necessary to avoid Covid-19 infection. In his statement, Sandro explains how PE is being re-assembled through mitigation efforts to reduce encounters, group activities, and cooperative moments with students. Sandro also mentioned how tasks may be planned now to avoid physical contact in the classes, shifting to a more individual approach away from the social. In this regard, Cecilia also commented on the limitation of physical contact:

I believe PE classes will change a lot, especially if we follow all the security measures that are in place now. Teachers will now plan other activities, in which physical contact is kept to the minimum. (Cecilia)

Preservice PE teachers usually have varying expectations about the profession, and they often include that it involves movement, wearing sports gear and direct contact with students (Varea and González-Calvo 2020). However, the expectations are being re-assembled through affects produced by the ongoing pandemic. The tasks and responsibilities of PE teachers may change in this new assemblage. Such work may include the disinfection of equipment, or acting more as police or office employees:

We have shifted in having a direct and face-to-face job to a job that is like being an office or admin employee. We are just with a computer delivering content to our students without having that immediate feedback or response from them. I really miss that contact that, at the end of the day, is key in education. That is the kind of education that we have grown up with and the one that we imagine. But I also think this is a temporary situation and I don't think we'll need to act as police in the next few years. I can't imagine all our teaching career being like this. It'd just change everything we know and I don't think it'll be to such an extent, but I'm not sure. (Gastón)

This shift in role as PE teacher, demands and expectations of the field brings different fears and assemblages among the preservice teachers, which can be dredged as follows:

Online teaching – fears – successful teaching – face-to-face delivery – PE roots – role changes

Gastón (above) also expressed the view that teaching before Covid-19 was better than the way they are supposed to teach PE now and related this to how education has traditionally been in the past. In

so doing, he showed a sentiment of nostalgia – that is, a sentimental longing for a period in the past – and how in current times of Covid-19 there is a wish to go back to the delivery of PE in the way it was done before the pandemic. The preservice teachers believed the PE assemblage they experienced as students was more effective than what students are experiencing today. That is, the subject has been re-assembled due to the changing nature of the environment which has led to different PE experiences for young people. Now that PE has been re-assembled differently, the preservice teachers struggled to align their bodies with the new version of the subject, and the use of digital technologies can augment or limit their alignment into the new PE assemblage.

For participants, direct instruction and demonstration from the teacher is important. This teaching style has historically been augmented through physical support (touching) with students in order to maneuver bodies and learn through bodily connections. Such a pedagogical approach was useful for these preservice teachers when they were students. As Sarah commented:

Until now, I have noticed that the teacher used to help students in the classes. For example, the teacher used to form two lines with students and in one of them helped students to perform a forward roll, and physical contact was very important. We can't do this anymore. Also, students were used to the direct contact with the teacher, waiting for instructions, even though physical contact wasn't always included. (Sarah)

Sarah continued making reference to the lack of teacher guidance and direct contact with students, and how this led participants to feel more insecure about their future role as PE teachers and what is expected from them.

Online teaching is going to make us not be able to deal with our fears and insecurities that we might have, such as the concern towards some of the students' attitudes and how to overcome these challenges successfully ... all this pandemic situation will end up in us not being able to negotiate these behavioural issues when we go back to face-to-face teaching. (Sarah)

This statement may be dredged as:

touching – fears – maneuvering – guidance – feelings – insecurity – return to school

The connections in the above assemblage produces a different PE, one that has changed according to these preservice teachers' perspectives. This new PE assemblage includes affects related to the precarity of PE (Kirk 2020), such as fears and insecurity. Fears and insecurity have been previously found in the assemblage of preservice PE teachers (see González-Calvo et al. 2020b) and they are now intensified because of Covid-19. In the next section we will explore the affects of this re-assembling toward precarity.

The affects of re-assembling PE: precarity, fear, and insecurity

Preservice teachers have been socialised into the previous PE assemblage. Thus, they are now struggling how PE is being re-assembled and shifting in light of Covid-19. The following statements highlight this:

Imagine that you return to school and suddenly, there is such joy from the students to see you again and they'll all run towards you to hug you. Would you dare to say, 'No, don't come closer to me'? That's quite hard! How can you say to a kid not to hug you? (Dario)

It'd be really difficult to tell a child not to hug you. (Cecilia)

These preservice teachers are now unfamiliar with the way the PE assemblage has shifted (due to Covid-19 as well as other actors like regulations, people, schools, etc.). PE now includes different affects, such as fears and social distancing, which were not included in their original PE assemblage. Thus, the shifting of the assemblage affects their familiarity and their ability to produce affects in the 'new PE'.

These participants struggled to think on a PE assemblage that does not include the affect of physical encounters with their students. Their bodies now have fewer opportunities to affect other

bodies and to be affected in a direct and face-to-face way. Some of those affects are now replaced online, and they still interact with other bodies, external things, objects and relations through different technologies. In so doing, this leads to a different form of assemblage, one that these participants are not used to.

It is worth clarifying that, as demonstrated elsewhere (see Varea, González-Calvo, and Martínez-Álvarez 2018), physical contact between teachers and students in Spain is not just allowed, but also fomented and taken for granted. In this respect, these preservice teachers were used to producing affects through physical touch with students. Now, they suddenly needed to replace those encounters with technological devices or other resources. However, they were simultaneously aware of the possible fears they may face if students demonstrated any possible symptom of having the Covid-19 virus, and how this would affect the assemblage of PE, as demonstrated below:

There's always going to be the fear if a cough is just a cough or the virus. We'll need to face a different reality. If they [students] come to hug me because they are happy, I don't want to say 'stop' and reject their hug. I think that's a part of our profession. But of course, there is fear and respect [towards the virus]. If a child touches you, you might need to go right away to wash your hands or whatever. There will also be fear about handling the equipment. For example, if you need to give a tennis ball to each one of them, maybe deep inside you'll be thinking 'are all balls well-disinfected?' Because at the end, I'll be the one responsible for that. (Sarah)

I've been thinking about the use of the equipment. If a child uses it, does it mean that the next child can't use it? Or how would it work? Will we need to disinfect the equipment constantly? Should we wear surgical masks at all times, which makes it more difficult for us to breath? I don't know ... it's a very uncertain situation. Regarding the content, most of it is included in the curriculum, and I think most of it related to body awareness, motor skills, physical activity and health is okay ... it'd be okay to teach it individually. But cooperative activities are also important and we'll need to limit them maybe. (Diego)

The participants above were projecting their role as PE teachers after the return to school, and how their role might need to be extended now to one that includes the chores of a cleaner, applying disinfectant to all the PE equipment after each touch from students. In so doing, this demonstrates the complexities of the human (e.g. teacher, student, bodies) and nonhuman (e.g. equipment, balls, masks) interactions. Let's dredge the statements above:

cough – virus – hug – reject – fear – touch – wash – equipment – balls – doubt – uncertainty – child – masks – curriculum – body – movement – limit

In the above narratives, our preservice teachers illustrated how fear, doubt, and precarity were produced in PE. Children's bodies are emplaced in PE. Unlike before, when a child coughs or sneezes it is no longer natural. Rather it produces different affects. These affects range from fear, rejection, worry, and uncertainty. It is the connection between the child – cough – equipment – virus assemblage that produces a different feeling in PE. As a consequence, the above objects converge to produce precarity in PE.

PE re-assemblage: pedagogical affects

Digital technologies have allowed for particular openings and closings for a re-alignment into the shifted PE assemblage.

... classes will be more like video tutorials of exercises, that is just to move a little bit, in which learning is not that effective. (Cecilia)

In this statement, Cecilia is describing how PE is being re-assembled through technology. In these new classes, encounters are mainly produced through technologies and video tutorials. Interestingly, Cecilia is resistant to the re-assembling when she claimed videos cannot be effective for students to learn the content. In this sense, the fear and uncertainty produced through the re-assembling process has led to Cecilia and others to underestimate their own ability to affect this process, especially in relation to digital technologies. From this perspective, digital technologies

limited participants' ability to produce affect in the re-assembled PE. Furthermore, participants commented on their need to have 'real' students to interact with, rather than just having them 'on screen', so they can better plan and assess the activities according to the immediate feedback and responses that they obtain from students. Manuel and Cesar commented in this regard:

Not having the students in front of you makes it extremely complex to plan the activities according to their psychological and pedagogical characteristics. For example, I plan my activities for 6- and 12-year-old children without knowing exactly how is each one of them, because I don't know them too well in person. I do whatever I can according to theoretical and logical guidelines, but I don't know if they work in reality. (Manuel)

The direct work with students is now lost and the teaching is dehumanised. We plan activities according to a standard space that families should have at their homes and making some simple adaptations so everyone can do them. That direct contact is now lost and it's so much more difficult to assess effectively both students and units. (Cesar)

Immediate face-to-face feedback and direct contact is thus important for the assemblage of the PE class. The student now is 'a virtual ghost' for the participants, shifting the assemblage of the PE class to one that includes encounters with virtual bodies rather than real ones. This shows the complexity of human (e.g. students, families) and nonhuman (e.g. space, homes) interactions. The statements above can be dredged as follows:

students – lost – dehumanization – space – families – homes

Direct instruction was the previous preferred method by these participants, but all of the above elements converge to require a new pedagogical perspective. This new pedagogical perspective needs to cater now for a different PE assemblage that includes different affects.

In this way, participants beliefs about the roots of PE are clearing affecting the assemblage. They suddenly faced the need to include digital technologies in the assemblage of PE, which they were not considered prior Covid-19. The preservice teachers also demonstrated a clear split between practice and theory in the subject. Therefore, this produces a new assemblage of the becoming of PE, in which digital technologies produce significant affects with the rest of the material bodies.

PE is a subject in which movement and face-to-face instruction has traditionally been significant. Students' bodies interact with movement, the teacher's body (e.g. when the teacher demonstrates an exercise), the space (e.g. the gymnasium) and with each other's bodies for group activities. In this sense, all these components used to conform the class, and now these preservice teachers struggle to shift that assemblage to one that includes more digital support and individual activities.

Rosa (below) also commented on the plan of the activities:

Planning activities that will be conducted without me being present with the students is a clear disadvantage. When I plan the activities, a part of me goes back to my childhood, to my PE classes as a student, and makes me remember the difficulty in the activities and games that I used to participate in. (Rosa)

In this statement, Rosa is describing how PE has been assembled in the past, creating affects around nostalgia. Rosa is resistant to think of PE that does not include her physical presence in front of the students. In so doing, nostalgia limited participants' ability to produce affect in the PE re-assemblage. Research suggests that the past biographies of preservice PE teachers are very influential (Curtner-Smith 1998; Morgan and Bourke 2008) and that they tend to draw strongly on their memories of their previous experiences in PE and sport contexts (e.g. Devís-Devís and Sparkes 1999; Dowling 2006; Sirna, Tinning, and Rossi 2010). Their physical capital contribute towards the formation of a sporting social identity that predispose the individual for the entry into the field (Brown 2005). However, nostalgia is not merely an expression of longing; it is also a result of a new understanding of time and space (Boym 2007). We are currently witnessing how Covid-19 is changing understandings of time and space, and how the assemblage between bodies, time, space and the becoming of PE is fluid and in constant change.

Together with this nostalgia, there is also hope from the preservice teachers to go back to ‘normal’ (and traditional) teaching of PE, and they are also aware of some of the (few) advantages that this pandemic may bring and how they may need to adapt themselves to the new demands of the profession:

I think it's possible for the situation to change, and that maybe we'll need to learn to do things in a different way. We might need to adapt and plan units with less physical contact and be aware of all preventive measures. We are going to be responsible for all of it anyway, and it's something we might need to learn how to do, and this is where all fears will be present. (Cecilia)

Some cons have now turned into pros. For example, as there is no direct contact with students, there is no such pressure regarding how they might react to different activities and tasks. (Carola)

The Covid-19 pandemic may therefore give students options for exploring new movement cultures on their own as part of PE, and it takes out some pressure from preservice teachers as they cannot see students' reactions. For example, we could see students now designing their own physical activity circuits that they can perform from their homes, or their chosen individual outdoor activities with social distancing, guided by the recommendations of their teachers. This would also allow a shift into more student-centred pedagogies, affecting the PE assemblage in a different. While most participants were uncomfortable with the new approach of delivering PE, some of them also demonstrated capacities to adapt to change and produce new knowledge. This shifting of PE may thus act as an agentic assemblage (Bennett 2010) in which ‘things’ act with different forces producing different intensities.

Conclusions

The purpose of this paper was to explore the changes of PE during Covid-19 and the effects on preservice PE teachers. Results suggest that Covid-19 is affecting the delivery of PE, shifting to individual away from social, having limited physical contact, and shifting the role of the teacher. All this comes together to produce a precarious situation for preservice teachers. A number of changes were detected in the delivery of PE, such as the need to reject touch and compassion, and how the pandemic produces fear and vulnerability. Such changes limit the ways teachers can teach and students can move through human and nonhuman bodies. This leads to a change on PE pedagogies, that is, the shift to online/video teaching, the shift away from direct instruction, feelings of dehumanisation, the role of space, families, and homes in producing learning. Several things get lost in the way, such as direct contact, and relationships with students and movement. This results in fears, vulnerability, and precarity, producing unfamiliar pedagogies. In this articulation, the preservice teachers felt nostalgia, which is the wishing to return to their experiences in PE.

Given the pandemic situation, it is difficult for these preservice teachers to imagine PE classes in the way they previously were, particularly in the context of Spain, where physical contact between teachers and students has usually been normal and taken for granted. Now, these participants lack interactions with other bodies, external things, objects and relations. However, their bodies are still interacting with other bodies, external things, objects and relations through different technologies, and this leads to a change of PE.

Preservice teachers have been traditionally educated into a previous notion of PE. Thus, the preservice teachers are now unfamiliar with the way PE has changed (due to Covid-19 as well as other actors like regulations, people, schools, etc.). This change affects their familiarity and their ability to produce and adapt into the ‘new PE’. The participants struggled to think on a PE class that does not include physical encounters with their students. The ‘new PE’ included encounters with digital technologies instead, which allowed for particular openings and closings for a re-alignment into a new idea of the PE field. Generally, the participants discounted their own ability to be ready for this change, particularly in their encounters with digital technologies. In so doing, digital technologies limited participants' perceptions of readiness to teach this different PE.

On the positive side, Covid-19 pandemic may give students options for exploring new movement cultures on their own as part of PE. We thus wonder if we are facing a radical change in the constitution of the PE field, and if these preservice teachers are ready to continue teaching PE in a way that includes more reliance on digital technologies, less (or no) physical contact with students and more personal space. This paper has shown the relationships between human and nonhuman bodies through the use of assemblages and affect in the age of Covid-19. While this paper has focussed only in Spain, it would be interesting to know the changes undergoing in PE in other countries during Covid-19 pandemic.

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