



Body as Being in the World to Explain the Phantom Limb Syndrome. What Does this Mean for Movement Programming?



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Abstract

The phantom limb syndrome involves sensations, including pain, of a non-existent limb with debilitating consequences on one's health and quality of life. Given that the reasons for the phantom limb syndrome are unclear, the purpose of this concept-based paper is to shed light on these mechanisms by showcasing how the habitual body as being in the world explains the phantom limb syndrome. Drawing on Merleau-Ponty's Phenomenology of Perception, this paper is divided into four sections. In the first section, the researcher describes Merleau-Ponty's conceptualization of the body as a subject, including the formation of a reworked body schema (motor habit). Based on this living body, in the second section Merleau-Ponty's argument related to the lack of a physiological or psychological explanation of the phantom limb syndrome is delineated. Instead of compartmentalizing the body and its functions, in the third section Merleau-Ponty's explanation of the phantom limb syndrome is shown by viewing the body holistically via its being in the world, explaining the dissociation between the "perfect" habitual body and present (actual) body with the missing limb. The habitual body does not want to let go of the amputated limb even though it knows its non-existence. In the last section, examples of holistic movement programming are proposed to rework the body schema and thus re-shape the habitual body (e.g., create new habituations); therefore, it can re-learn to function in the world with the missing limb while experiencing less intense (if any) sensations of the phantom limb.

Keywords: Phenomenology; Phantom Limb; Body as Being in the World; Movement Programming

Introduction

The phantom limb syndrome involves sensations and/or pain of a missing limb [1,2]. These sensations can last for years with debilitating effects on psychosocial health and quality of life [3,4]. Although there are several hypotheses regarding the reasons for the phantom limb syndrome, the underlying mechanisms for this phenomenon are unclear. Drawing on Merleau-Ponty's Phenomenology of Perception [5], the purpose of this concept-based paper is to shed light on these mechanisms by showcasing how the habitual body as being in the world explains the phantom limb syndrome. Refuting an exclusive physiological or psychological explanation, a holistic approach of the body as a subject needs to be recognized, whereby the pre-amputated habitual body- which used to function in the world with all limbs- cannot concede with the reality of a missing limb which used to be in existence; thus, the presence of the phantom limb syndrome [5].

This paper is divided into four sections. In the first section, the researcher describes Merleau-Ponty's conceptualization of the body as a subject vs. an object, including the formation of body schema (motor habit) that can be reworked and renewed. Given

this action-oriented meaning of the body, in the second section Merleau-Ponty's argument related to the lack of a psychological or physiological explanation of the phantom limb syndrome is delineated. Instead of compartmentalizing the body and its functions, in the third section Merleau-Ponty's explanation of the phantom limb is shown by viewing the body holistically via its being in the world. Specifically, the habitual body that existed and functioned in the world without any deficiencies cannot concede with the reality of the actual/present or changed body with a missing limb. The habitual body does not want to let go of the amputated limb even though it knows its non-existence. In the last section, examples of holistic movement programming are proposed to rework the body schema and re-shape the habitual body (e.g., create new habituations) so it can re-learn to function in the world with the missing limb while experiencing less intense (if any) sensations of the phantom limb.

Body as a subject

In his magnum opus, Phenomenology of Perception, Merleau-Ponty showcased that physiologists realized that the body is not "partes extra partes", in that the body parts are not independent

of each other causing mechanistically a stimulus-response perception [5p75]. Instead, the body parts holistically connect with each other and the world they experience: “these central lesions seem to leave the qualities intact and rather modify the spatial organization of the givens and the perception of objects” [5p76]. Patients with central lesions can still differentiate color and “sense hot and cold... if an extended-enough stimulus is applied” [5p76]. Merleau-Ponty argues that the different stimuli we sense are in fact anticipated based on our experiences in this world,

“... by leaving behind the body as an object, *partes extra partes*, and by turning back to the body I currently experience, for example, to the way my hand moves around the object that it touched by anticipating the stimuli and by itself sketching out the form that I am about to perceive. I can only understand the function of the body by accomplishing it and to the extent that I am a body that rises up toward the world” [5p78].

Contrary to Cartesian theorizing, Merleau-Ponty elevated the essence of the body from an object to a subject or *The Lived Body*, that senses and learns via experience or *praktognosia*. The body senses and understands the world by throwing itself into meaningful movement significations. It walks, climbs, dances, runs, swims, and expresses; thus, it creates a habitual motor pattern (body schema/motor habit) that can be renewed and reworked [5,6-16]. This habitual motor pattern (body schema) better explains the phantom limb syndrome rather than certain psychological or physiological theories as will be discussed below.

The psychological and physiological theories do not explain the phantom limb syndrome

The phantom limb syndrome refers to certain sensations and/or pain (phantom limb pain) in the part of the body where there is a missing limb [1,2]. It is as if the missing limb is present and felt at rest and/or during different daily functions. Such phantom limb sensations and especially pain have negative health consequences including increased anxiety and depression and decreased quality of life [3,4]. Drawing on Merleau-Ponty’s *Phenomenology of Perception* [5], it will be discussed below that the physiological and psychological theories regarding the phantom limb syndrome fall short of explaining this phenomenon.

Based on the peripheral theory, peripheral nerves from the stump of the amputated limb are supposed to cause sensations in the brain or spinal cord. However, these sensations remain even after anesthesia with cocaine. In fact, the phantom limb syndrome can result from cerebral lesions without any amputation. The subject even senses the exact position of the real limb right before the injury [5]. A central theory would not make sense either because the neuropathways between the brain and the missing limb are non-existent due to the amputation. If a physiological explanation of the phantom limb syndrome is not sufficient, then

there must be a psychological explanation like anosognosia (i.e., denying the absence of the missing limb and pretending that the limb is still there). However, concluding that the phantom limb is a “memory or wish” makes no sense either because “the phantom limb disappears when the sensory conductors that run to the brain are severed” [5p79]. Therefore, it seems that the phantom limb syndrome can be explained by a mix between psychological factors (e.g., memory and emotions of the past – acceptance or refusal of conditions) and physiological aspects (e.g., “nervous impulses”). It is key then to identify the medium – i.e., the habitual body as being in the world – through which the “psychical” (consciousness or “for-itself”) and the “physiological” (“in-itself”) interact to explain the phantom limb syndrome [5p79].

Being in the world: the organic and living body explains the phantom limb syndrome

It is erroneous to conclude that the sense of the phantom limb is “a memory, a perception... the actual presence of a representation” or that anosognosia is “the actual absence of a representation” [5p82] because based on psychoanalysis people tend to encounter or avoid situations and risks of which they are fully aware – they know their existence [5]. The patient with anosognosia knows very well what the risks are by “encountering their deficiency” (trying to move as if a limb was present) and this is why they can “avoid it so well” [5p82]. This is like avoiding a situation that would make somebody come to the realization that a loved one is dead. The existence of the phantom limb or the denial of the absence of an amputated limb occur because of the habitual body with which the patient used to function in their daily activities.

“The phantom arm is not a representation of the arm, but rather the ambivalent presence of an arm. The refusal of the mutilation in the case of the phantom limb or the refusal of the deficiency in anosognosia are not deliberated decisions, they do not occur at the level of their consciousness... they are not the order of the “I think that... What refuses the mutilation or the deficiency in us is an I that is engaged in a certain physical and inter-human world, an I that continues to tend toward the world despite deficiencies and amputations and that to this extent does not de jure recognize them” [5p83].

The habitual body prior to the amputation knows how to function in the world pre-reflectively because it is a living body that throws itself into meaningful movement significations. It will reach for an object, turn a doorknob, drive a car, run, and swim [5,7-11,16]. “The body is a vehicle of being in the world and, for a living being, having a body means being united with a definite milieu, merging with certain projects, and being perpetually engaged therein” [5p84]. The habitual body will not accept that an object that used to be manipulable is no longer manipulable due to an amputation; therefore, it will attempt to cover up the situation by repressing the deficiency and sensing the existence of

an absent limb (phantom limb) [5,17]. There is a conflict between the habitual body and the actual (present) body, in that the action from the former to the latter is interrupted due to deficiency [5,17]. The former senses a limb that is not there anymore (the phantom limb) and cannot concede with the reality given by the actual body (e.g., I cannot drive my car because my right arm is missing). The habitual body wants to continue to function as it used to-by e.g., using both arms. However, such an action is interrupted by the present body due to the amputation. Therefore, the habitual body is the one experiencing the phantom limb syndrome.

To summarize, the existence of the phantom limb syndrome does not have solely a physiological or psychological explanation. Rather, it arises because the body is a subject and it is habituated to function with all four limbs by its being in the world. The habitual body ties together the “psychical” and the “physiological.” It does not accord with the new reality of the present (actual) body that has a missing limb. The existence and function of the living body in the world unites physiology and psychology. The body is not compartmentalized into different systems that explain cause and effect relations (stimulus-response). The body is an organic and holistic power that influences our senses and experiences.

“... modern physiology gives a very clear reply... the psycho-physical event can no longer be conceived in the manner of Cartesian physiology or as the contiguity between a process in itself and a cogitation. The union of the soul and the body is not established through an arbitrary decree that unites two mutually exclusive terms, one a subject and the other an object. It is accomplished at each moment through the movement of existence” [5p91].

Whole body movements to manage the phantom limb syndrome

Given the power of the habitual body to sustain its existence and deny the incompleteness of the actual (present) body with the missing limb, it is important for movement educators to incorporate whole-body movement experiences that emphasize a balanced body schema (motor habit) [7,8,14]. With practice, the present body can be habituated to function with the missing limb and perhaps without strong sensations (if any) of the phantom limb syndrome. In other words, the present body will become the new habitual body by readjusting its body posture and function without the need for a phantom limb. This is perhaps the reason that phantom limb pain tends to be less prevalent among people with congenitally missing limbs than those who acquire a missing limb later in life [18,19]. After reworking the body schema, a new habitual body emerges that matches the actual/present body.

Specifically, in exercise programming, a holistic view of the body and its functions needs to be considered for a renewed and balanced habitual body schema that can function without relying on phantom limb sensations, especially painful ones. Holistic

movement expressions in performing arts like physical theatre, dancing, and aerial dancing are proven to improve body schema (e.g., body posture, awareness, confidence, and physicality) and mental health, leading to the long-lasting love of movement and well-being [6-16,20-22]. Holistic exercises for the reduction of the phantom limb syndrome that combine the mind and the body (e.g., tai-chi and yoga) are lacking in the literature [23]. Multi-modal training including progressive muscle relaxation, mental imagery, and phantom exercises seem to be effective in reducing phantom limb pain and phantom limb sensation [1]. In a recent meta-analysis, it was shown that although mirror therapy seems to have positive effects on phantom limb pain in the short-term, its long-term effectiveness is unclear [24]. Therefore, whole-body, multi-modal, and embodied exercise training, like the ones used in performing arts, may be effective in reducing the phantom limb syndrome probably because such training leads to a renewed and balanced habitual body schema (motor habit) that can learn to dissociate itself from the missing limb it used to know for its functioning.

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