



Touching and Being Touched During Physiotherapy Exercise Instruction

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Abstract

This contribution focuses on a physiotherapy consultation in which the first author of the contribution is the patient and the second author is the physiotherapist. It features analysis of video excerpts in which (1) the physiotherapist instructs the patient how to do an exercise and (2) the patient turns the physiotherapist's instructions into a course of action while (3) the physiotherapist monitors, assesses, guides, and corrects the patient's instructed actions by deploying touch. The investigation draws on video-recordings and transcriptions of the physiotherapist's and the patient's interaction during the exercise instructions, the authors' experience of touching/being touched during these instructions, and their shared understandings as discussed during data-sessions devoted to select video-clips of exercise instructions. In a learning process, the instructor's instructional corrections are critical: they provide learners with relevant specifications and explanations as to how instructed actions and/or remedial actions are to be accomplished. Whereas monitoring and touching the patient allows the physiotherapist to feel, assess, correct, and guide the patient's instructed actions, being touched permits the patient to feel how the physiotherapist's touch resonates beyond locally circumscribed body contact and adapt her movements accordingly. Our contribution thus reveals touching/being touched configurations that establish joint attention and action on extended sensoriality as forming constitutive parts of a dynamic sensorimotor process of inter- and intrabodily resonance, which is challenging to investigate.

Keywords Touching and being touched · Social interaction · Physiotherapy exercise instructions · Ethnomethodology & conversation analysis · Phenomenology · Critical properties of hybrid studies of work

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Introduction

Regular practice of therapeutic exercises at home is key for a patient's rehabilitation process, i.e., to improve mobility and strength, release pain, and restore physical functions (Quentin et al., 2021). Instructing patients how to properly perform exercises constitutes a central activity of face-to-face physiotherapy consultations (Higgs et al., 2001). This contribution examines the interactive organization of therapeutic exercise instructions during a face-to-face physiotherapy consultation in which the first author of the contribution is the patient and the second author is the physiotherapist. It adopts Ethnomethodology and Conversation Analysis (hereafter EMCA), informed by phenomenology, to unpack the experienced organization of three-part instruction sequences (Lindwall et al., 2015) in which (1) the therapist instructs the patient how to do a therapeutic exercise and (2) the patient turns the physiotherapist's instructions into a course of action while (3) the physiotherapist monitors, assesses, guides, and corrects the patient's instructed actions by deploying touch.

Based on video-recordings and their transcriptions, EMCA studies have shown that in therapeutic settings, therapists and patients/clients deploy a whole array of embodied resources (Merlino, 2018; Parry, 2005; Sahlström, 2010), such as talk, gestures, and touch, to organize and accomplish therapeutic exercise-instruction sequences in an orderly and methodical way. To make sure that the patient performs the exercise in such a way that regular performance supports the therapeutic process, it is key for the therapist to monitor, assess, correct, and guide the patient's instructed actions. This allows the therapist to provide the patient with "instructional corrections" (Hindmarsh et al., 2014), i.e., relevant details and explanations about how instructed actions are to be accomplished. In speech and language therapy for example, in cases in which a patient with aphasia displays troubles in producing a target word, the therapist guides the patient's remedial actions by deploying "professional touch" (Merlino, 2020). Furthermore, drawing on phenomenology, (Nishizaka, 2020a, 2020b) analyzes prenatal examinations to show how guiding a pregnant woman's perception of the unborn baby's location and body parts is accomplished. Nishizaka reveals how, to be successful, the midwife's guiding instructions must involve the intertwined deployment of "professional vision" (Goodwin, 1999, 2000: 16) and touch on the pregnant woman's abdomen.

During the exercise-instruction sequences studied here, monitoring, assessing, correcting, and guiding the patient's instructed actions similarly require the physiotherapist's coordinated deployment of professional touch and vision, for example, to feel and assess the muscular reaction or tension involved when the patient performs a specific exercise movement. Our contribution focuses on how the physiotherapist and patient organize reciprocal configurations of touching and being touched during exercise instructions. Our aim is to discuss how they thereby establish joint attention and actions on extended sensoriality as forming

constitutive parts of a praxeological “dynamic sensorimotor and interaffective” process not only of “interbodily resonance” (Fuchs, 2017: 7), but also what we have come to call intrabodily resonance. It thus puts the spotlight on a “field of intercorporeal reciprocity” that cannot be captured by video-recordings and is difficult for persons other than those involved to identify, access, or describe—in short, to investigate (Meyer et al., 2017: xxvi). To achieve an understanding of the participants’ interactive and embodied organization of the exercise-instruction sequences and their lived experience thereof, while also seeking to ensure that key “criterial properties” (Ikeya, 2020: 25) of “hybrid studies of work” (Garfinkel, 2002: 100) were achieved, the involved physiotherapist and patient have closely collaborated with each other throughout the analytic and writing process.

Investigating how exercise-instruction sequences are interactively and reflexively organized *and* experienced by those involved, our study makes it possible to shed new light on the phenomenological orderliness of touching and being touched in a patient’s exercise training. It reveals on the one hand how the physiotherapist’s touching the patient during exercise-instruction sequences allows her to accomplish professional tasks, i.e., to feel (being in contact with) inter- and intrabodily resonances caused by her embodied instructions, and thus to assess, guide, and correct the patient’s instructed actions. On the other hand, it shows how being touched permits the patient to focus her attention on how physiotherapist’s touch resonates in other parts of her body that are not touched. This makes it possible to extend feeling, being affected by the physiotherapist’s touching beyond the local points of skin-to-skin contact and to increase her understanding of the way instructed exercise movements are to be performed.

In the following, we first discuss the relevant literature. Second, we outline how, as a characteristic feature of hybrid studies, the collaboration between the physiotherapist and the patient developed throughout the analytic and writing process. Then we examine four consecutive excerpts to shed new light on the interactive organization of touching and being touched during exercise instructions and on the phenomenological experience of those involved. Finally, in the conclusion, we discuss what the research on touching and being touched might gain by adopting an EMCA approach informed by phenomenology and what requires further and/or distinct research.

Research on Touch in Physiotherapy and Beyond: From a Phenomenology of Perception to a Praxeological Phenomenology and Back

Touch is a topic of interest in numerous fields of medical and healthcare research, with each approach conceptualizing it differently and investigating different aspects of it (Field, 2019). While haptic science and neuroscience examine which receptors are stimulated when a person is touched and how the corresponding stimuli are processed and perceived (Toma et al., 2019), in nursing science, the field with the highest number of publications on touch, researchers differentiate distinct intentions behind the touch. Touch that is not related to a specific examination, but aims instead

to comfort, alleviate fear, show interest, etc. is referred to as expressive touch, while touch that is used to perform a task, including the use of instruments, is referred to as procedural touch (Davin et al., 2019). In their meta ethnography, Kelly et al. (2017) identify numerous functions of touch in healthcare, i.e., to offer care, obtain information about the patient's complaints during a physical examination, prepare the patient, and deliver a therapeutic intervention.

Surprisingly, there is little research on touching and being touched in physiotherapy. In physiotherapy research, the term "touch" is usually not used. Touch is referred to as manual therapy and considerations distinguish between different types of hands-on techniques. Thus, research in the field of physiotherapy predominantly investigates the effectiveness of touch in terms of pain and stress reduction. Hands-on techniques are a core element of physical therapy (Rutberg et al., 2013). Geri et al. (2019) propose considering hands-on techniques as a specific form of touch. They distinguish physical and emotional properties of these techniques: "The physical properties encompass the deep knowledge of anatomy and biomechanics, and their administration is encoded within the parameters of the technique described in terms of contact area, location of the contact, intensity and frequency of the stimulus. The emotional properties are related to the sympathetic contact with the patients..." (Geri et al., 2019: 2).

Drawing on phenomenology, Bjorbækmo and Mengshoel (2016: 17) argue that touching and being touched constitute distinct phenomena when experienced rather than "merely" studied from an outside point of view. Basing their study on interviews with physiotherapists and their own observation, Bjorbækmo and Mengshoel (2016: 17 ff.) highlight that through touching and being touched, physiotherapists and patients are involved in a "silent touching, moving, dance" and communicate with each other distinctly: "In the 'doing' part of the therapy session, verbal communication between therapist and patient disappears and communication seems to continue by other means.... Through touching others and being touched, people are brought into proximity in ways more complex than simple skin-to-skin contact." Although their study is based on interviews and close observation of physiotherapy interaction, it does not report in detail how the silent dance is interactively organized or how its intelligibility is experienced by the involved participants. The descriptions of how touching and being touched is experienced by those involved thus remain rather abstract and general. Drawing on EM and his first-hand experience of physiotherapy, Abrams (2014: 434, 442) outlines how in physiotherapeutic *practices* of measurements, the patient's body is "disclosed as objectively present" by both patient and practitioner. He argues that the patient's "body," as experienced and perceived by the participants in practice, is thus "made and remade in the 'just-thisness' of the interaction order" (Abrams, 2014: 443) and thus becomes "accountable," i.e., "detectable, countable, recordable, reportable, tell-a-story-aboutable, analyzable" (Garfinkel, 1967: 33) by outside observers as well. Yet, touching and being touched during physiotherapy exercise interaction has—to our knowledge—not yet been studied in this way.

To bridge this gap, our contribution examines the interactive organization of touching and being touched in physiotherapy exercise instructions, at the same time exploring how those involved—the physiotherapist and the patient—achieve the practical task and how they experience and understand the course of the instruction sequences achieved in this way. To do so, we draw on recent EMCA research that investigates human senses as interactional phenomena (Gibson & Vom Lehn, 2021), while also drawing inspiration from phenomenological conceptions of “intercorporeality” (*intercorporéité*) (Merleau-Ponty, 1964 [1979]). These studies examine the sensing human body “as being constituted by its corporeal relations and interactions with other human... bodies” (see Merleau-Ponty’s conception of intercorporeality discussed by Meyer et al., 2017: xviii). Instead of seeking to reveal how the body is experienced and perceived within a specific activity by soliciting participants’ accounts thereof (see for example Bjorbækmo & Mengshoel, 2016), the studies account for the ways in which intercorporeality, “the phenomenon of understanding, of sharing minds—is always—and always in specific ways—embedded and experienced in concrete, intercorporeal [inter]action[s]” (Meyer et al., 2017: xviii).

Focusing on video-recordings of naturally organized intercorporeal interactions, some studies have examined in detail how touch is organized during ordinary and work activities and have revealed how they are accomplished in an orderly and methodical way (Burdelski et al., 2020; Cekaite & Mondada, 2020). In everyday family interaction, touch is omnipresent: establishing intercorporeal configurations in which touch is not only a central vehicle of affect and care, but also, and just as importantly, of social control and socialization (Cekaite, 2010; Cekaite, 2015; Cekaite & Goodwin, 2021; Goodwin & Cekaite, 2018; Katila, 2018). More specifically, research on touch-in-interaction in medical/healthcare settings investigates for example how speech therapists use a wide array of resources, including “professional touch” (Merlino, 2020), to instruct and draw the attention of aphasic patients to available scaffolding resources, e.g., the therapist’s mouth movements, to accomplish the instructed labelling exercise; studies also examine how a midwife touches an expectant mother’s hand in order to guide it and enable her to feel the unborn baby with her own hands (Nishizaka, 2014). Nishizaka (2020a: 224) thus describes a practice in which: “touch is not only a resource with which to construct instructions but also what is to be instructed; those who guide one’s touch may feel things through one’s hands, feel one feel things through one’s hands, and so on.” Moreover, with a focus on “multi-sensory” perception, i.e., the integrated interplay between visual and tactile perception, Nishizaka (2020b: 4) draws on the notion of “professional vision” as introduced by Goodwin (1994). This vision is understood as a “perspectival” type and is examined as intrinsically embedded and constrained by the situated working practice in which it is deployed. In accordance with a study in which Goodwin and Smith (2020) show how touch is deployed to teach professional vision to trainees in the geological field, Nishizaka (2020b) provides a detailed examination of an ultrasound consultation to reveal how a midwife uses touch to guide an expectant mother’s tactile and visual perception of her unborn baby (see

also Nishizaka, 2011) so that she can better interpret and understand ultrasound images of it.

Based on video-recordings and their transcriptions, these EMCA investigations pay special attention to the parties' interactive organization of embodied resources such as gaze directions, talk, specific gestures, and facial expressions that are available for inspection and accountable by involved parties and outside observers/researchers alike. Examining the embodied and situated organization of touch in therapeutic exercise instructions (Martin & Sahlström, 2010; Merlino, 2018, 2020; Parry, 2005) or during midwives' guiding of pregnant women's tactile and visual perception, the studies thus shift "from perceptual relations explicated from a viewer's or hearer's vantage point to the local (temporally and spatially situated) production of actions that are interactionally accountable" (Lynch & Eisenmann, 2022: 100). Applying Garfinkel's "misreading of Gurwitsch," they thus "move from a phenomenology of perception to a praxeological phenomenology" (Lynch & Eisenmann, 2022: 100).

Yet, as pointed out by Meyer et al., (2017: xxvii), accounting for participants' experience and achievement of shared understanding on the basis of video-recordings and their transcriptions alone might be difficult. Researching intercorporeal interactions, which involve touch, might in specific cases require accessing and accounting for experiences of touching/being touched that are "limited to those who participate in it" (ibid). Our contribution focuses on filmed and transcribed physiotherapy exercise-instruction sequences in which the involved parties' experiences build upon each other in a reflexive way: "every bit of the self's corporeal experience is constituted by the corporeal actions of another and in which other's actions and experiences are in turn constrained and shaped by the corporeal actions of self during which the satisfaction [in our case instructional insight] that is gained is the result of the quality of intercorporeal tuning" (Meyer et al., 2017: xxvii). Moreover, shared understanding of the reflexively organized exercise instructions does not rest solely on audibly and/or visually available "mimetic" or "complementary" expressions of "interbodily resonance" (Fuchs, 2017: 7), i.e., expressions of resonances that are mediated through the involved parties' talk, gaze directions, facial expressions, or specific gestures. Instead, the involved parties' understanding rests on their situated and embodied experience of touching (or nearly touching) and being touched (or nearly being touched) as a unique means of accessing how the instructed bodily movements and/or touching/being touched produce what we call *intradodily resonance*, while the parties' attention on each other's publicly available expressions of *interbodily resonance* recedes into the background.

We therefore treat our firsthand experience of physiotherapy exercise-instruction sequences, qua therapist and patient, as one crucial resource for studying, reflecting upon and writing about the fine tuning of touching and being touched during exercise instruction interactions. We thus discuss the term "resonance" (Fuchs, 2017: 16) as a practical intercorporeal phenomenon whose phenomenological significance cannot be investigated or accounted for independently of its situated experience.

Collaboratively Researching Touching and Being Touched During Physiotherapy Exercise-Instruction Sequences

Focusing on touching and being touched during physiotherapy exercise instructions, this contribution seeks to understand how touching and being touched is interactively and reflexively organized and experienced by the involved physiotherapist and patient. It is part of a “workplace study” (Luff et al., 2000) on the use of digital tools in physiotherapy that involved ethnographic fieldwork in two outpatient physiotherapy clinics, video-recordings of naturally occurring physiotherapy consultations ($N=27$), and interviews with the filmed physiotherapists ($N=4$) and patients ($N=8$). In conducting this study, the authors of this contribution came to collaborate closely with each other, and two physiotherapy consultations¹ in which the first author was the patient (PATa) and the second author the physiotherapist (PHYa) were recorded.

In the face-to-face physiotherapy consultation, exercise-instruction sequences constituted a central activity, taking up approximately a good third of the overall consultation time (in our case, 60 min). Indeed, after the opening and anamnesis, functional assessment tests, and a brief introduction to the mobile app that the patient was encouraged to use for home exercise (see Keel et al., forthcoming), the physiotherapist instructed the patient how to perform physiotherapy exercises designed to relieve PATa’s lower back pain and the muscular tension in her shoulders. After they completed the first five exercises, there was a short recapitulation of the exercise program that was to be provided via the app, and then PHYa engaged in instructing and PATa in performing two other exercises before they finally moved to the closing of the consultation.

The exercise instructions aimed at empowering PATa to regularly perform the therapeutic exercises at home to support the therapeutic process and rehabilitation progress. The instruction of five distinct exercises was organized in three parts (Lindwall et al., 2015): (1) PHYa instructed PATa, movement-by-movement (Rau-niomaa et al., 2018), how to perform the exercise, while sometimes supporting it through a demonstration; (2) PATa turned the embodied instruction(s) into a course of action; (3) PATa’s instructed actions were closely monitored, assessed, and sometimes corrected by PHYa. In this way, “the body of the trainee,” here, of the patient, was “being socialized into the comportment and embodied skills of the expert,” here, of the physiotherapist (Hindmarsh et al., 2014: 248).

Beyond talk and the physiotherapist’s demonstrations of the exercises, touching and being touched were experienced as an important resource by the patient, who is also an EMCA researcher, and the physiotherapist as it allowed them to understand and properly accomplish their respective tasks at hand (see Fig. 1 below, taken from exercises 2, 4, 5).

The study was born out of a common interest in touching/being touched during exercise instructions in physiotherapy. The first author’s interest in touch, qua patient,

¹ One consultation was held face-to-face and one remotely via the utilization of the app.



Fig. 1 Touching and being touched during physiotherapy exercise-instruction sequences

relates to interrogations regarding the effectiveness of touching/being touched as a resource for instructing patients to perform therapeutic exercises. To what extent and how does its use permit the patient to understand how an exercise is to be performed to support the rehabilitation process effectively? Qua EMCA researcher, the first author is interested in investigating and experimenting with what it takes to achieve “careful descriptions” of embodied and experienced practices of exercise instructions that involve touching/being touched, i.e., descriptions that are “written in natural language, which can be read in alternate ways depending on the occasion; that is, as descriptions, as instructions, or as actions produced in response to those instructions, ‘without absurd errors and other incongruities’” (Garfinkel, 2002: 101, quoted in Ikeya, 2020: 27). As an experienced physiotherapist, the second author is interested in the phenomenon of touch in general. Touch is a central element in physiotherapy practice but is usually referred to as a hands-on technique (Rutberg et al., 2013) and mainly studied for its effectiveness. Gaining more insight on the interaction between touching and being touched and how this influences the body perception of both physiotherapist and patient is helpful for a physiotherapist. The contributors, qua patient/EMCA researcher and therapist, thus considered touching/being touched during physiotherapy exercise instructions as “*topically* relevant... in the actual empirical lived workplace occasions of the work it describes” (Garfinkel, 2002: 100).

To address the issues to which the contributors, qua patient, EMCA researcher and physiotherapist, were seeking to find solutions (see above): (1) the first author examined the recordings of the physiotherapy consultation in which she is the patient and the second author is the physiotherapist; (2) the first author then selected video-clips featuring touching/being touched during exercise instructions; and (3) transcribed the selected clips according to the conventions developed by Jefferson (2004) and Mondada (2018); (4) on this basis and in collaboration with the organizers of the panel held at the 17th IPrA conference (see Relieu et al., 2021), data-sessions, in which the second author also participated, were conducted; (5) the collective analysis achieved in this way gave rise to the first author’s selection of four consecutive Excerpts (1–4), on the basis of which she formulated a primary analytic description and presentation on touching/being touched in exercise-instruction

sequences (Keel, 2021); (6), finally, during the writing process, the two authors held another data-session for the purpose of revising the analytical descriptions of Excerpts 1–4. Furthermore, they collaborated, notably to discuss relevant literature on touch in physiotherapy/healthcare for the contribution's background section.

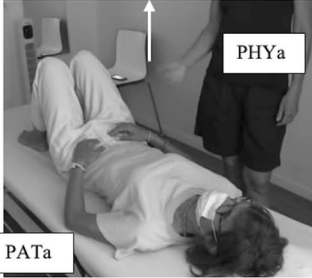
The following section offers an analytic description of the ways touching/being touched are reflexively organized and experienced by PHYa and PATa during physiotherapy exercise-instruction sequences. The exercise instructions described here are preceded by various instances and forms of touching/being touched (see Fig. 1 above). Issues of trust between the involved parties and related issues of legitimacy for touch or body contact to occur, which might be central to studies on touch-in-interaction (see e.g., Keevallik, 2020), were not experienced as requiring particular attention in the scope of this analysis by the involved parties. Instead, the analytic focus centers around how, in exercise-instruction sequences, (professional) touch and vision are reflexively organized and how touching/being touched are experienced by the physiotherapist and the patient as a crucial resource for achieving mutual understanding of the ongoing interaction and for accomplishing their respective tasks: (1) giving instructions, (2) turning the instructions into courses of action, and (3) assessing and correcting the instructed action, qua physiotherapist and patient during exercise-instruction sequences.

Analyzing the Reflexive Organization and Experience of Touching and Being Touched

The following four Excerpts (1–4) constitute the first instruction sequences, through which the physiotherapist teaches the patient the fourth exercise in this consultation. The interactants have thus already been fully engaged, for roughly 13 min, and have had a chance to experience each other in this activity of the consultation. Having completed the instructions for the third exercise, PHYa asks the patient to get into the position for the next exercise instructions by lying down on her back on the table, before the Excerpt (1) starts:

Excerpt 1

1 (0.3)-(0.3)*(0.3)
 phya *directs rarm up->
 pata >>moves upper body and head to get into a lying position->



2 PHYa du stre:#:cksch\$ (.) de rächti arm re*chtig (0.1) >ddecki*<
 you stretch the right arm towards the ceiling
 fig. #figure 1
 pata ->\$still in a lying position->>
 phya -*lowers rarm-----*-holds->
 pata >>çrarm up->



3 (0.7)#(0.7)
 fig. #figure 2
 4 PHYa genau.*ç
 that's it.
 ->*directs to PATa's rh->
 pata ->çhlds pst->



5 (0.7)#*(0.1)ç(0.5)#(0.1)ç***(0.1)
 fig. # figure 3a&b #figure 4
 phya ->*clasps PATa's r wrist, turns it to the left*
 phya *lets go of PATa's r wrist->
 pata ->çturns left-çhlds pst->
 phya ->%kneels down->

After checking that PATa's position on the table is comfortable for her, PHYa starts demonstrating an exercise (l. 1, Fig. 1), thus initiating a classic three-part **I**nstruction-**R**esponse-**E**valuation sequence. While directing her right arm upward, she formulates an exercise instruction (I) that takes a declarative format in second-person singular (l. 2): "du strecksch (.) de rächt arm richtig (0.1) decki (*you stretch the right arm towards the ceiling*)." Declaratives usually do not imply immediate compliance (Deppermann, 2018).

However, while PHYa lowers her arm back into "home position" (Sacks & Schegloff, 2002) and before she has completed her verbal instruction (l. 2), PATa starts directing her right arm towards the ceiling (Fig. 2). PATa thus indicates that accessing PHYa's embodied demonstration via "peripheral vision" (Sudnow, 1983: 36–37), while listening to her talk, is sufficient to turn the first instruction into a course of action. Following PATa's embodied response (R), which is not accompanied by talk (l.3), PHYa evaluates (E) PATa's instructed action positively by deploying a closing downward intonation: "genau. (*that's it.*)" (l. 4). Before PATa has completed her instructed action, i.e., reached a full extension of her upward arm movement and come to a halt, she thus treats PATa's instructed action (R) as satisfactory enough to close the I-R-E sequence. Our video-recording does not allow us to identify PHYa's gaze direction at this point in the interaction. However, the fact that she has assessed PATa's instructed action positively (l. 2–4) indicates her deployment of "professional vision" (Goodwin, 1994; Nishizaka, 2020b).

Furthermore, PHYa then starts to direct her left hand towards PATa's right wrist (l.4). During the silence in line 5, she clasps PATa's right hand, initiates a slight rotation of PATa's right wrist towards supination, i.e., the hand turned in relation to the elbow so that the thumb points outward or the palm points upward (see also in contrast to pronation, i.e., the hand turned in relation to the elbow so that the thumb points inward or the palm points downward), and at the same moment, PATa joins in by putting her wrist and forearm into motion (Fig. 3a + b, 4). Although she has just previously produced a positive evaluation of PATa's instructed action (l. 4), PHYa uses professional vision to evaluate the positioning of PATa's joints as correctable. Using professional touch, she then initiates an embodied "instructional correction" (Hindmarsh et al., 2014) that she completes conjointly with PATa.

In Excerpt 1, the parties' understanding of the first instruction sequences depends on expressions of interbodily resonances (talk, gaze directions, and specific gestures) that are audibly and visually available to them and to (reasonably competent) outside observers alike. However, PHYa and PATa's joint achievement of an instructional correction involving touching/being touched extends the field of intercorporeal reciprocity.

Through professional touch, manipulating PATa's wrist, PHYa not only initiates an instructional correction in relation to the wrist's position, but also gains access to, and is affected by, PATa's intrabodily resonances, which are generated through her touch. PATa in turn is not only being touched by PHYa, but also, while joining the movement initiated by PHYa without resistance, is able at the same time to feel how the small joint action regarding the wrist-position resonates (see pointed arrow in Fig. 3a) within her right shoulder, or put in other words, how it opens up a space of relaxation there. As pointed out by Fuchs (2017: 5): "...in every face-to-face encounter, the partners' subject-bodies are intertwined in a process of bodily resonance, coordinated interaction, and "mutual incorporation" which provides the basis for an intuitive empathic understanding." An instance of touching/being

touched thus not only extends PHYa’s and PATa’s experience of the intercorporeal configuration beyond the points of skin-to-skin contact between PHYa’s right hand and PATa’s right wrist, but also, and more importantly from a praxeological point of view, expands PATa’s understanding of the instructional correction regarding the position of her right wrist.

PHYa’s engagement in touching also implies a shift of her positioning/proximity towards PATa’s arm: just after initiating the instructional correction, PHYa begins kneeling down (Excerpt 1, l. 5). As we will see in the next Excerpt (2), while kneeling down and formulating the beginning of the next instruction, she closely monitors the position of PATa’s right elbow:

Excerpt 2



6 PHYa .hh* und jetzt machsch de*f arm# l*ang f#us*f de
.hh and now you make the arm long out of
 fig. #figure 5a& #figure 6,
 ->*dwn to PATa’s elb----*hlds----*up-> ->%kneels->
 <<gaze direct. PATa’s arm->fPATa’s relb--f-upf down->
 7 schultere use re*fchctig de*ck~*iç
the shoulder towards the ceiling
 ->flooks at PATa’s upper rarm, down rshoulder ->
 ->*lowers---*hlds*lowers into home position->
 ~dcts to PATa’s rsh-->
 pata ->çup-----çholds rarm position-->



8 (0.2)#(0.5)
 fig. #figure 7

At the beginning of Excerpt 2, PHYa utters an instruction (l. 6–7): “machsch de arm lang us de schultere use richtig decki ([you] make the arm long out of the shoulder towards the ceiling).” It is preceded by an inbreath by PHYa, the connector “and,” and the temporal indicator “now” and, as the first instruction, takes a declarative format in the second person singular. The combination of its sequential position, i.e., after a first instruction (l. 1–4) and an instructional correction (l. 5), and its turn format establishes PHYa’s instruction (l. 6–7) as a next instruction in a series (see Goldberg, 1975 on instructional chains) that requires the recipient to turn it into a course of action “now” (l. 6). This is the way PATa understands PHYa’s turn. She begins to direct her right arm towards the ceiling before PHYa has even completed what she is saying (l. 7; Fig. 6).

While kneeling down and monitoring PATa’s right elbow (Fig. 5a+b), PHYa not only starts uttering a second instruction (l. 6), but also directs her right hand towards PATa’s right elbow, positioning her fingers around it as if about to grasp it but without actually touching it, holds this position for a short moment (Fig. 5a+b), and then directs her hand upward, still maintaining her hand position a short distance from PATa’s elbow. On the one hand, PHYa’s professional vision directed to PATa’s right arm and elbow allows her to assess whether PATa’s arm remains straight. At the same time, PHYa’s professional near-touch of PATa’s right elbow and lower arm with her right hand and her proximal position allows her to guide PATa’s upward movement (l.6; Fig. 5a+b) (Nishizaka, 2014), while feeling and being in a position to quickly intervene with an embodied instructional correction if PATa’s arm does not remain straight. On the other hand, PHYa’s near-touch of PATa’s upward directing arm (l. 6; Fig. 5a+b) makes it possible for PATa to understand that the right elbow needs to remain straight during the upward movement to maintain the intrabodily resonance (established previously), i.e., the felt connection between the position of her right wrist and her right shoulder.

In contrast to the instruction in Excerpt 1 (l. 1–2; Fig. 1) that was preceded by a distant demonstration, which PATa accessed by deploying peripheral vision, here PHYa produces a demonstration that involves nearly touching PATa’s right elbow and lower arm during the upwards movement (l. 6, Fig. 5a+b) before completing her instruction “richtig decki (towards the ceiling)” (l. 7). Rather than deploying peripheral vision, at this point PATa is thus focused on the connection between her right wrist, elbow, and shoulder and the requirement for her arm to be in a straight position. This embodied focus allows PATa to sense the suspension of being nearly touched, when PHYa holds her right arm up from a distance (Fig. 6), and then starts directing her arm down again. Indeed, PATa treats the suspension as a prompt to turn PHYa’s instruction (l. 6–7) into a course of action: while PHYa lowers her right arm and again holds her fingers as if about to grasp PATa’s right elbow, nearly touching it (l. 7), PATa directs her right arm further up towards the ceiling in such a way that it causes her right shoulder to lift from the table (Fig. 7). PATa’s holding the extended position (l. 7; Fig. 7) coincides with PHYa’s completion of her instructive specification (l.7). PHYa completes it while looking at PATa’s right shoulder and directing her left hand towards it (l. 7; Fig. 7).

Overall, PHYa’s touching (Excerpt 1; l. 5; Fig. 3a) and nearly touching demonstration (Excerpt 2; l. 6; Fig. 5a+b) are key moments, allowing PHYa to initiate and accomplish an instructional correction conjointly with PATa, to understand how to specify the first instruction and to assess PATa’s instructed action. These instances of being nearly

arm down, holds her position and thus makes it available for further inspection. Evaluating PATa's instructed action positively (l. 13), PHYa directs her right hand back to PATa's right elbow and again assumes a position in which she is nearly touching it (Fig. 8b).

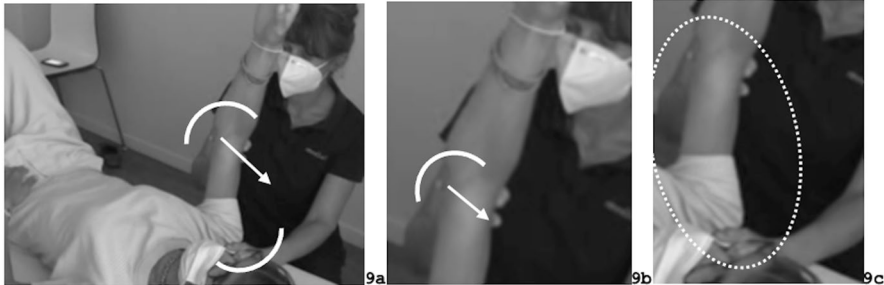
In Excerpt 3, PHYa constitutes a nearly touching configuration with both hands (Fig. 8b), after PATa's instructed actions of bringing her right arm down come to a halt (l. 11), and PHYa has evaluated it positively (l. 13). PHYa's hands are oriented towards each other to constitute a nearly touching configuration, which allows PATa to feel one nearly touching hand around her right elbow and another nearly touching hand ready to receive her right shoulder, and thus, to experience her arm as an intrabodily resonating whole.

In the last Excerpt (4), we discuss how PHYa further exploits this field of intercorporeal closeness by using her hands to accomplish two distinct professional touchings. Touching PATa's right shoulder with her left hand enables PHYa to assess PATa's instructed action of bringing the arm down while touching/pushing PATa's right elbow with her right hand achieves an instructional correction of PATa's elbow and arm position:

Excerpt 4

14 $\neg(0.4) * (0.4)$

phy a -thumb wraps PATa's rsh->
phy a ->*pushes relb down twds PATa's head->



15 PHYa $\text{f}\text{c}\text{b}\text{lib}$ eher e $\text{chli}\#$ do:f
stay rather a little here:

fig. $\#$ figure 9a&b&c

figes semi-closed->
pata ->ctwds head->

16 $(0.1)\text{f}(0.1)*\neg$

phy a ->f PATa's rh->

phy a ->*lets go of PATa's relb/rsh, directs downwards->

17 PHYa $\text{ge}\text{c}\text{nau}$.

that's it.

pata ->chlds pst->>

18 (0.2)

Following PHYa's positive assessment of PATa's instructed action (Excerpt 3; l. 13), there is a silence (line 14), during which PHYa first wraps her thumb around PATa's right shoulder (Fig. 9a+c). On the one hand, this new thumb position transforms a nearly touching into a touching configuration. Being touched by PATa's right shoulder, which now rests in her left hand, and by PATa's trapezius descendens, which she touches with her left thumb (Fig. 9a+c), allows PHYa to assess whether PATa's shoulder and trapezius descendens are relaxed, and thus whether PATa's instructed action of bringing the right arm down has been accomplished properly. On

the other hand, shortly after wrapping her thumb around PATa's shoulder, PHYa also transforms her nearly touching of PATa's right elbow into a very gentle push that allows PHYa to achieve another professional touching: using the index, middle, and ring fingers of her right hand, she pushes PATa's right elbow towards extension, while at the same time her positioning of her remaining fingers allows her to give PATa's right elbow a slight tilt towards extra rotation of the shoulder (Fig. 9a + b). PHYa thus accomplishes a second embodied instructional correction through touching (l. 14).

In contrast to Excerpt (1), in which the correction has been accomplished through one touching hand only, this time PHYa uses both hands. Having positioned her left hand a short distance from PATa's right shoulder, as if about to grasp it (see Excerpt 3; Fig. 8b), she now actually touches it (Fig. 9c) while accomplishing the instructional correction by touching PATa's right elbow with her right hand (Fig. 9b). Moreover, in contrast to Excerpt (1), this time PHYa's following verbal instruction (l. 15) takes the format of an imperative. Combining the imperative with the use of an indexical space indicator "here" (l. 15): "bilib eher e chli do: (*stay rather a little here*)," and then retracting both hands from PATa's right shoulder and right elbow, PHYa thus invites PATa to immediately turn the instructional correction into a course of action (Deppermann, 2018). In doing so, PATa joins PHYa in her touching repositioning of PATa's right elbow. PHYa then directs her hands down into home position and assesses the patient's instructed action positively (l. 17), while PATa holds her position. Together, PHYa and PATa thus close the second instructional correction (l. 15). In contrast to PHYa's instructional correction in Excerpt (1), here PHYa's positive assessment in line 17 retrospectively treats PATa as being in charge of achieving the instructed correction and at the same time displays her satisfaction with PATa's achievement.

In Excerpt 4, constituting a touching configuration with both hands makes it possible for PHYa to first access PATa's intrabodily resonance and assess PATa's right shoulder and second to initiate an instructional correction regarding PATa's elbow/arm position. Being touched through PHYa's pushing of her right elbow and receiving of her right shoulder (Fig. 9c) in turn allows PATa to further consolidate her experience of the intrabodily resonating connection between the body parts being touched or nearly touched in the previous instruction sequences.

Conclusion/Discussion

As stressed by Fuchs, no "mental representation," "mindreading," or "introspection" is required for understanding, and as a corollary, for investigating the sensorimotor process of interbodily resonance in interaction (Fuchs, 2017: 8, 10). In this contribution, we argue that this phenomenological reading is convincing as long as the expressions of resonance are audibly and visually available for those involved and/or those investigating the achieved field of corporeal reciprocity. However, in this contribution, we argue that if the interaction between the parties involves professional touching/being touched, the availability and intelligibility of interbodily resonance is challenging for outside observers.

Our analysis and discussion of the physiotherapy exercise-instruction sequences (Excerpts 1–4) draws on video-recordings and transcriptions of them, on PHYa's and PATa's expertise, qua physiotherapist and patient and on the insight they gained by

experiencing touching/being touched during the studied sequences. This contribution highlights how in physiotherapy exercise instructions, touching goes hand in hand with being touched. It thus approaches interactions between a physiotherapist and a patient in terms of intercorporeality: “of bodies that co-perform actions in which they voluntarily and reflexively switch their parts as subject and object; and of bodies that co-perceive not only the situation at hand, but also the embodied experiences of one another and the surrounding world that they presently inhabit together” (Meyer et al., 2017: xxviii).

It thereby reveals how touching/being touched constitute crucial resources for the involved parties’ shared understanding of the activity at hand. On the one hand, the use of professional vision in concert with professional touching/being touched allows the physiotherapist to access inter- and intrabodily resonances that are not available to outside observers. The physiotherapist thus uses touching/being touched to correct the patient’s instructed actions (Excerpt 1), to guide them by deploying nearly touching configurations (Excerpts 2 and 3), and to transform them into touching configurations to assess the patient’s instructed action, identify troubles, and initiate an instructional correction (Excerpt 4).

On the other hand, being touched by the physiotherapist’s professional vision and touching allows the patient to feel how the physiotherapist’s touching generates intrabodily resonance in body parts other than the ones concerned by the skin-to-skin contact, and thus to extend the understanding of embodied instructions beyond visually and audibly accessible corporeal configurations. In Excerpt (1), PHYa’s touching of PATa’s right wrist resonates in PATa’s right shoulder, and thus allows PATa to feel intrabodily and understand the resonating connection between her right shoulder and the point of skin-to-skin contact on her right wrist. Furthermore, PATa’s perception of PHYa’s near-touch of her right elbow and shoulder (Excerpts 2 + 3) makes it possible for her to understand the importance of keeping her arm straight to feel the resonating connections between her right wrist, elbow, and shoulder. Finally, PHYa’s touching of PATa’s right shoulder and right elbow to initiate an instructional correction regarding the arm’s position (Excerpt 4) consolidates this understanding.

The analysis of Excerpts 1–4 allows us to describe how both involved parties come to understand how touching/being touched extends their field of corporeal reciprocity beyond the points of skin-to-skin contact. The field of corporeal reciprocity achieved in this way encompasses the parties’ perception of each other’s inter- and intrabodily resonance. Praxeologically speaking, this allows them in turn to increase their understanding of how the deployment of touching/being touched makes instructions, instructed exercises, the physiotherapist’s assessment thereof, and instructional correction mutually intelligible. We thus reveal how changing intercorporeal configurations between the physiotherapist and the patient allow those involved to establish and share sensoriality that remains invisible to outside observers and cannot be captured by cameras but are crucial for both giving and understanding physiotherapy exercise instructions.

In analogy to Fuchs’ description (2017: 9) of the process of interbodily resonance as implying: “I experience the other’s gaze as me being seen by him, or in other words, I see him seeing me (as seeing him),” our contribution reveals how, within the practice of physiotherapy, exercise instructions engender inter- and intrabodily resonance: The patient experiences the physiotherapist’s touching as her being touched by the physiotherapist, or in other words, the patient feels the

physiotherapist touching her (as feeling her). How these sensorimotor processes of inter- and intrabodily resonance, which are of praxeological importance for physiotherapists and patients alike, should be explored and described further without soliciting the involved parties' introspection in one or another way remains to be seen.

Transcription conventions

Transcription conventions for talk-in-interaction developed by Gail Jefferson (2004, pp. 24–31):

[A left bracket indicates the beginning of overlapping talk.
]	A right bracket indicates the end of overlapping talk.
=	Equal signs indicate no break or gap (latching talk). A pair of equal signs, one at the end of one line and one at the beginning of a next, indicate no break between the two lines.
(1.0)	Numbers in parentheses indicate a timed pause (measured in tenths of seconds) within or between utterances.
(.)	A dot in parentheses indicates a brief interval (+/- a tenth of a second) within or between utterances.
YES	Upper case indicates extra loud sounds relative to the surrounding talk.
<u>yes</u>	Underscoring indicates some stress, via pitch and/or amplitude.
°yes°	Degree signs bracketing an utterance or parts of it indicate that the sounds are softer than the surrounding talk. The more degree signs there are, the softer the sound.
>yes<	Right/left carats bracketing an utterance or utterance part indicate that the bracketed material is sped up compared to the surrounding talk.
((smile))	Double parentheses contain the transcriber's descriptions.
::	Colons indicate a prolongation of the immediately prior sound. The longer the row of colons, the longer the prolongation.
par-	A dash indicates a cut-off.
.h	A dot-prefixed row of h's indicates an in-breath. Without the dot, the h's indicate an out-breath.
xxxxx	A row of x's indicate that the transcriber was unable to grasp what was said. The number of x's reflects the length of the missing talk.
(a little)	Parenthesized words indicate a guess at the talk.
(())	Doubled parentheses contain the transcriber's descriptions.
?	A question mark indicates an upward intonation.
.	A dot indicates a downward intonation.
,	A comma indicates a continuing intonation.
↑↓Word	Shift in pitch, (↑) up or (↓) down

Transcription conventions for embodied actions developed by Lorenza Mondada (2018, p. 106)

* *	Descriptions of embodied movements are delimited between
+ +	two identical symbols (one symbol per participant's line of action) and are synchronized with corresponding stretches of talk/lapses of time.
*--->	The action described continues across subsequent lines
---->*	until the same symbol is reached.
>>	The action described begins before the excerpt's beginning.
---->>	The action described continues after the excerpt's end.
.....	Preparation.
----	Full extension of the movement is reached and maintained.
,,,,,	Retraction.
ava	Participant doing the embodied action is identified when (s)he is not the speaker.
fig	The exact moment at which a screen shot has been taken is indicated
#	with a symbol showing its temporal position within turn at talk/segments of time.

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Declarations

Conflict of interest The authors have no competing interests to declare that are relevant to the content of this article.

Informed Consent All participants gave their informed written consent.

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