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## Exploring the educational landscape of juggling – challenging notions of ability in physical education

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### ABSTRACT

**Background:** Research on physical education (PE) shows a prevalence of narrow and reductionist views on what counts as ability. These views tend to privilege certain students and marginalize others, and often equate ability with technique-based sport performance. A lot of research is still directed towards the above problem. However, very few have devoted time and energy to actually resolving this problem. If no alternatives to narrow and reductionist views of ability are presented, then research will struggle to make a difference to the practice of PE. Assuming that movement is a key element in PE, the question of what counts as ability in PE is, we argue, a question of what capabilities a learner needs to develop in order to move in different ways. Investigating what movement capability can mean will provide possibilities for discussing and negotiating the meaning of ability in PE when the learning goal is something other than technique-based sport performance.

**Purpose:** The aim of this paper is to further advance the knowledge base of what movement capability can mean within the context of PE. By achieving this aim, we intend to challenge narrow views on ability and thereby provide enhanced possibilities for PE to make a difference for students' abilities through education.

**Theory and method:** The process of coming to know something can be seen as exploring, with all senses, a landscape. Exploration involves recognizing details and nuances of the landscape and their relationships to one another. In this investigation, we examine what there is to know in the landscape of juggling using Ryle's and Polanyi's notions of knowing and learning. In line with a focus on the learners' perspectives, interviews and observations were conducted with students whilst they were coming to know juggling. Ethnographic-type conversations were used to help students describe what they seemed to know or were aiming to know. Students were invited to write diaries with a focus on their experiences during the learning process, which we hoped could extend our insights regarding the experiential aspects in learning.



**Findings:** Findings of the investigation suggest that in the group of students, four significant ways of knowing the landscape of juggling are important: grasping a pattern; grasping a rhythm; preparing for the next throw and catch and navigating one's position and throwing. The research challenges the narrow view on ability as technique-based sport

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performance by providing examples of what movement capability can mean in terms of knowing a movement landscape alternatively to knowing a specific movement ‘in the right way.’

## Introduction

Research on physical education (PE) shows a prevalence of narrow and reductionist views on what counts as ability (Croston and Hills 2017; Kirk 2010; Larsson and Quennerstedt 2012; Larsson and Nyberg 2016; Tinning 2010). Narrow and reductionist views typically center on performances in specific activities, often derived from sport and exercise contexts, which are usually measured and valued in relation to explicit or implicit standards of excellence. This perspective of ability tends to privilege certain students and marginalize others, often equating ability with technique-based sport performance (Tidén, Redelius, and Lundvall 2017; Wilkinson, Littlefair, and Barlow-Meade 2013). Marginal attention is put on *what* there is to know when you can perform a specific movement. Yet despite Evans’ (2004) call for solutions some 15 years ago, most researchers have settled with confirming the situation. Few have endeavored to offer alternatives to narrow and reductionist views on ability in PE.

Starting from the uncontroversial assumption that movement is a key element in PE, a central question concerning ability in the subject is what does it mean for a learner to become capable of moving in new or different ways? In other words, what do people need to know in order to grasp new or different ways of moving? In previous research we have attempted to reconceptualize ability (to move) as movement capability, thereby indicating a change of perspective (Barker, Bergentoft, and Nyberg 2017; Larsson and Nyberg 2016; Nyberg and Carlgren 2015). Movement capability designates a perspective where dualisms such as mind–body, theory–practice, and product–process are transgressed. However, this research is still in a developing phase.

The aim of this paper is to further advance the knowledge base of what movement capability can mean within the context of PE. By achieving this aim, we intend to provide a way to challenge narrow views on ability as performance of pre-determined movements based on given standards, and thereby provide enhanced possibilities for PE to make a difference for students through education.

## Notions of ability in PE

The issue of ‘ability,’ and how it is recognized and valued in PE has been discussed by researchers for some years (see e.g. Croston 2013; Evans 2004; Hay and Lisahunter 2006; Kirk 2010; Larsson and Quennerstedt 2012; Tinning 2010; Wright and Burrows 2006). From different fields in social science this body of research highlights social injustice and inequity in PE as a consequence of often implicit and taken-for-granted views of ability. This taken-for-grantedness has been highlighted by researchers through investigations of, for example, policy documents, teaching practices, and assessment procedures (Evans and Penney 2008; Hay and Macdonald 2010). Some scholars have argued that reductionist views equate ability with talent and sport performance, which in turn reflect elite sporting values such as aggression and competitiveness (Wilkinson, Littlefair, and Barlow-Meade 2013). Such interpretations privilege students who possess sport-related physical capital (see for e.g. Croston and Hills 2017) and may marginalize students who lack this kind of physical capital (Wilkinson, Littlefair, and Barlow-Meade 2013).

In this paper, we consider Evans’ (2004) discussion of PE’s educational value. Evans asks provocatively whether PE should deal with education or whether it should deal with society’s and governments’ desire for control, a desire reflected in, for example, dominant discourses of health and sport (Evans 2004). Ability, within the discourses of health and sport tends to be reduced to motivation and effort, boiling down to individual decision-making and leaving aside questions of education:

Ability' tends to be characterized as a one-dimensional, static entity, one among many fixed or incremental attributions' (the others being effort, task difficulty, luck). While this has usefully centred attention on the nature of individual decision-making in health and sport, it has little to say about the nature of 'ability' as a dynamic, sociocultural construct and process. (Evans 2004, 99).

Considering ability in PE as a sociocultural construct and also a dynamic process, Evans (2004) opens up possibilities to problematize and challenge prevailing views of ability. Evans also suggests that PE could provide possibilities for children and young people to develop ability to 'relate to and access physical culture and "health" in and out of schools' (Evans 2004, 98). We believe movement capability, as is presented in this paper, could contribute to enhanced possibilities for young people to access and, possibly, disrupt physical cultures.

Narrow views of ability are also reflected in the assumption that sports skills are not educable (Evans 2004; Larsson and Nyberg 2016; Warburton and Spray 2017; Wilkinson, Littlefair, and Barlow-Meade 2013). In PE, this assumption is reflected in the lack of opportunities that students have to develop their movement capabilities, especially the ones who haven't got a possibility to practice different ways of moving outside school (Wilkinson, Littlefair, and Barlow-Meade 2013; Londos 2010). Learning and developing movement capabilities has not been an explicit pedagogical aim of PE teachers, despite it being an explicit aim in curricula (Hay and Macdonald 2010; Larsson and Nyberg 2016). Evans (2004) stressed a need for PE to 'develop and enhance "the body's" intelligent capacities for movement and expression in physical culture, in all its varied forms' (Evans 2004, 94). There is however, little evidence to suggest that PE is now developing and enhancing these capabilities among students. Some possible explanations for the lack of clear pedagogical strategies for teaching and learning movement capability may be that there still is a need to identify and nurture (Evans 2004) this dimension of ability and that PE teachers have limited access to relevant scientific knowledge in the area (Barker, Bergentoft, and Nyberg 2017). Additionally, it is difficult to articulate the kind of practical knowledge (Polanyi 1969; Nyberg and Larsson 2014) involved in movement capability. Regardless of reason, we argue that Evans' analysis of physical education's expected educational mission is still relevant in many countries (Croston and Hills 2017; Quennerstedt 2019).

As a result of a shift some ten years ago in Swedish school curricula from teaching prescribed subject matter to developing students' capabilities, Swedish physical education and health (PEH), teachers are expected to develop students' all-round movement capabilities. The meaning of this concept has however, been unclear for teachers as well as researchers (Nyberg and Larsson 2014). Uncertainty regarding the concept of movement capability has led to a number of studies investigating the meaning of movement capability from the perspectives of the movers as well as from the observer. Additionally, these studies also dealt with exploring ways of articulating the tacit knowing involved in movement capability. Two studies involved skilled expert athletes (Nyberg 2014, 2015), one involved novices (Nyberg and Carlgren 2015) and one involved students presenting a dance task (Carlgren and Nyberg 2015). The findings suggest that movement capability involves specific ways of knowing movements such as knowing how to: discern one's own and others' ways of moving; discern ways of using space, navigate one's embodied awareness, regulate one's rotational velocity, describe abstract concepts in bodily ways and solve movement problems (Nyberg 2014, 2015; Carlgren and Nyberg 2015; Nyberg and Carlgren 2015).

To summarize, recent studies show an emerging knowledge base of what movement capability can mean, and also, ways of articulating this kind of practical knowledge. The findings are presented as specific ways of knowing, comprising theoretical and practical aspects of knowledge as an indivisible whole which we elaborate on in the next section.

## **Movement capability – knowing and learning**

In this paper, movement capability will be understood in line with Gilbert Ryle's notion of 'knowing how' (Ryle 2009). Ryle challenges what he calls 'the intellectualist legend,' which holds that there is a separate mind and body and that the mind is the theorizing, 'supervising'

part of the individual. This is the core assumption of the Cartesian dualism, which has influenced Western thinking for many years. Conceiving instead body and mind as an integrated whole (Ryle 2009; Polanyi 1969) means for example, that terms such as *understand*, *comprehend* and *experience*, which are frequently used to refer to cognitive processes, can be seen as interwoven cognitive and physical processes.

Polanyi (2002) suggests that knowledge always has a personal, tacit dimension, which grows and develops from the practice in which we are dwelling. Personal knowledge constitutes a background on which we rely while relating to issues in the foreground of our awareness. Polanyi refers to this background as 'subsidiary,' and the foreground as 'focal.' That which constitutes a person's focal awareness depends on what constitutes the subsidiary knowing (Polanyi 2002, 55). Conceiving learning as a process of expanding the subsidiary knowing means also that experts know more than novices, which seems self-evident. The interesting issue is that what is in focal awareness for novices is not the same as for experts' because of the differing constitutions of their personal and tacit knowing.

Following Ryle's and Polanyi's notion of knowledge, we can understand movement capability as a form of knowledge without needing to specify that it is a physical skill. The meaning of grasping a certain way of moving, then, can be described as knowing, expressed through intelligent actions, not necessarily steered by delimited cognitive (mental) processes. Also, learning can be seen as a process of exploring and experiencing, through 'intelligent practice' (Ryle 2009) as well as 'dwelling' (Polanyi 1969) in a practice, assimilating a continuously broader, subsidiary knowing. Thus, the process of learning does not necessarily require going through certain steps like climbing a ladder (Moya, Renshaw, and Davids 2016). Rather, the process of learning can be compared to exploring a landscape, choosing different paths and directions in order to discern details and their relationships in a continuously more nuanced way (Carlgrén 2015). While not all movement learning research relies on the ladder metaphor (see e.g. Jess, Atencio, and Thorburn 2011; Light and Kentel 2015; Moya, Renshaw, and Davids 2016), few investigations have emphasized what there is to know when learning movements or what it means, from the perspective of the learner, to grasp and master specific ways of moving. When we in this study are searching for what there is to know for somebody in the landscape of juggling, we are then searching for different ways of knowing in terms of what the learners seem to know, or aim at knowing, in line with Ryle's and Polanyi's notion of knowing and learning.

## Methodology

To achieve our aim of exploring what there is to know in a specific movement activity we selected juggling, which falls outside a 'mainstream sport' category. The intention was to provide learning experiences that, as far as possible, did not disadvantage students without sporting backgrounds (Tidén, Redelius, and Lundvall 2017). Since we were interested in the learners' perspective, we chose to observe and interview students whilst they were learning juggling through 'embodied exploration' (Barker, Larsson, and Nyberg *in press*). In short, this means that the learners were provided possibilities to explore the movement landscape of juggling in terms of different ways of juggling. They were also encouraged to pay attention to their own way of moving while attempting to juggle. We used ethnographic-type conversations (Spradley 1979) that could help us 'entice' (Janik 1996) what the students seemed to know or were aiming to know. We invited learners to continuously write diaries with a focus on their experiences during the learning process (see Day 2019), which we hoped could extend our insights regarding the experiential aspects of learning.

Since it was important that the learning environment was in line with the central tenets of Ryle's (2009) and Polanyi's (1969, 2002) notions of knowing, we created learning sequences and worked closely with the teacher. The learning environment was designed to (1) encourage students to engage in 'intelligent actions' in terms of being aware of one's own as well as others' ways of moving and discerning critical aspects of a movement for the purpose of adaptation (Ryle 2009), and (2) provide time for students to 'dwell' in, and be aware of their learning processes (Polanyi 1969). Learning experiences were created in a way that reconfigured the conventional hierarchically organized,

goal-directed skills where students need to learn what are considered 'basic' skills before moving on to more advanced ones (a ladder approach), and instead involved learning juggling as exploring a landscape. This approach to movement learning has been termed embodied exploration (Barker, Larsson, and Nyberg *in press*) and aims at helping learners become sensitive to different ways of moving so that they can continuously adapt and adjust their movements to new and challenging situations. Ten lessons were planned, mainly based on station cards comprising different kinds of exercises presented as films, pictures and issues to reflect upon, individually as well as in collaboration with peers.

### **Sample and data production**

Seven teachers from three schools near the university where the project was based were contacted and invited to participate. The voluntary nature of participation meant that teachers who were: (1) interested in the project, and; (2) felt that the project was in line with their school's educational programs and scheduling requirements, were invited to take part. In this respect, sampling could be termed a combination of convenience and purposive (Berg 2001). Two teachers from one of the schools agreed to participate and were invited to discuss the planned lessons. They were asked to encourage the students to explore juggling as a landscape to know in different ways and to be aware of their learning process.

Data was produced using (1) video observations, (2) interviews and (3) student diaries. During the sequence, two researchers circulated in the learning environment with chest-mounted GoPro video cameras. These two researchers filmed individuals and groups of individuals, remaining with individuals/groups for approximately five minutes at a time. This aspect of the empirical work is most accurately described as 'participant-observation' (Angrosino 2005), which involved asking students questions about their learning and responding when the students' had comments or posed questions. The students were also asked to keep learning diaries (Day 2019) in which they recorded their own reflections. To structure the use of the diaries and to stimulate reflection, questions such as: 'What factors helped/hindered you in your learning today?', 'What did you pay particular attention to when you were practising?', 'Did any problems arise when you were learning to move?', and 'How do you typically solve problems during these learning sessions?' were given. Questions were communicated either on paper instruction sheets, on the gym whiteboard, or verbally by the teacher.

### **Ethical considerations**

Ethical approval was granted by the Regional Research Ethical Review Committee. The research was conducted in accordance with the Swedish Research Council's ethical guidelines (SRC 2017). Participants and their guardians were informed about the project, its purpose, and how collected material would be used. Informed, active consent, which included possibility to cease participation at any time, was obtained from the participants. The use of video cameras raises issues of confidentiality, possibilities for anonymity, and privacy for all participants. The video-filmed material was only used for research purposes and was stored in a manner that prevents unauthorized use. Anonymity was not possible or desirable in the analysis of the data. Instead, we aimed for anonymity in the presentation/publication of the research results. Therefore, the students' names are fictitious in this paper.

### **Analysis**

The first step in the analysis was to read the students' diaries and watch video films. Questions guiding the analysis from the outset were: what difficulties do the students seem to be aware of regarding juggling and what do they seem to aim at when trying to solve these difficulties? What do students seem to know when practicing and when regarding themselves as 'knowing juggling' or 'knowing



aspects of juggling.’ The focus of the analysis was in other words, what does it mean, from the perspective of the learners, to be able to juggle in some way? What did the students need to know in order to be able to juggle?

Conceiving the students’ knowing as simultaneously a relationship between focal and subsidiary awareness (Polanyi 1969) and embodied in terms of thinking and doing as interwoven (Ryle 2009), we searched the students’ diaries and the video films for expressions and actions that could signal tentative different ways of knowing how to juggle. In the process of coding, we used what Miles, Huberman, and Saldaña (2013) refer to as In Vivo Coding. All expressions regarded as in some way related to what the students aimed at or seemed to master regarding juggling were marked by the first author who sent the marked transcriptions to the two other authors. The authors came to agreement on the possible meanings of the marked expressions as they related to knowing. For example, expressions such as: ‘A moment were I got stuck was to throw the ball up in the air again once I had caught it’ (Owen), was regarded as an identified aim to know how to prepare for the next throw in the juggling sequence.

For many of the students, a taken for granted embodied image of what it means to juggle was to master the throw-throw-catch-catch sequence and be able to do it iteratively at least a couple of times without breaks (Barker et al. *in press*). However, this has not been the one and only frame of reference when analyzing what there is to know in juggling since our perspective on juggling (as is the case for moving in general) is that there are different ways of knowing juggling.

The initial construction of different categories of knowings was made by the first author. The other two researchers responded to the suggested categories, which resulted in revised categorization as well as extended descriptions of these groupings. This process was enhanced by the fact that all three researchers had participated *in extenso* all observed lessons.

The next step was to analyze the internal relationship between the constructed categories. This was done by the three researchers involved in the study and generated revisions of the categories. To increase confirmability as well as reliability (Miles, Huberman, and Saldaña 2013) the outcome of the analysis was revised again as a result of discussing the categories. Some categories were, for example, considered as subcategories and were subsequently integrated in the main category. The videos of the lessons were then observed again by the first author in order to confirm that the different categories of knowing could also be recognized in expressions of action. The outcome of the analysis resulted in four specific ways of knowing juggling, representing different aspects of movement capability.

## Findings

The result of the analysis of what the students know, or aspire to know in the landscape of juggling, is here presented as four different categories. Each category represents significant issues, from the perspective of the learners, as they attempt to grasp and master, juggling in different ways.

### *Patterns as part of the landscape of juggling*

The students struggle with understanding a system, or a pattern, that is, that the objects with which they are juggling, must be thrown and caught in an order that makes it possible to catch the object with one ‘empty’ hand so that they do not have to stop and start again. Linda describes her and Felicia’s struggle with grasping a pattern:

Once you have thrown the balls we don’t really know which ball you’re supposed to throw next. That makes the whole thing ‘choppy’. And we don’t know if it’s supposed to be that way. (Linda)

The pattern can be constituted differently, depending on, for example, how many objects one chooses to manage. Annie has got it this way: ‘for example, you don’t have to manage catching and throwing with the same hand when juggling with two balls’ (Annie). But juggling with two

balls is not necessarily easier than juggling with three balls as Erica expresses it: ‘I actually experienced that it was more difficult and more frustrating to juggle with two balls since I didn’t understand how to juggle with them’ (Erica).

Grasping a pattern involves knowing which balls are in the air. Linda and Felicia, when juggling with three balls, have grasped a pattern, and how to express this pattern when comparing juggling with two balls: ‘The difference between juggling with two and three balls is that you can have a better flow with three balls because then you always have one ball in the air’ (Linda and Felicia).

### Picture 1

Picture 1. Linda is on her way to grasping a pattern with two circles.

Kevin has realized there can be different patterns and he gets frustrated because he believes that the pattern he ‘sees’ is wrong:

As soon as three balls get into my hands when juggling there is a burn-out in my brain. Because, I can’t manage three falling balls simultaneously. But probably also because I see it as something other than what it is. I don’t see three balls being thrown in a bow in the middle. I see it as if I throw the three balls from one hand to the other so they are thrown in one big circle. (Kevin)

Actually, Kevin is indeed grasping a pattern and he manages juggling this way although he does not believe himself able to juggle. This kind of pattern (a circle pattern) is used by two students who juggle with two balls. However, they seem to be more confident than Kevin in believing that this is a way to juggle as one of them expresses it on the video clip: (GP020005 kl 03.20): ‘this is how to do it when juggling, isn’t it?’ (Amy)

### Picture 2

Picture 2. Amy is juggling in a pattern explained by Kevin as throwing the balls from one hand to the other so they are thrown in one big circle.

When juggling together in pairs or groups the students realize they have to communicate and agree on a specific pattern. One task they could choose – ‘asteroid juggling’ – involved students working in groups of four to seven to keep as many volleyballs in the air as possible. Sara writes about how her group succeeded with this task:

It went really bad at first but once we found a pattern regarding to whom we should throw the ball we did great. We managed to work with five balls with a nice flow. (Sara)

Grasping a pattern seems to be significant to know in the landscape of juggling. Several students try hard to understand different purposeful patterns depending on (i) amount of objects, (ii) kinds of objects and (iii) how many people are juggling together.

### Rhythm as part of the landscape of juggling

The students express a need of finding a rhythm and keeping a certain pace in order to juggle without breaks, striving for a kind of flow. Throwing and catching at specific moments, and adjusting the distance with which the balls are thrown, are issues to grasp in order to get a rhythm. Amanda expresses it in relation to juggling in a group: ‘The hard thing with this is to get the timing, so everyone throws at the same time and with appropriate distance’ (Amanda). Grasping a rhythm seems to cause a sense of mastering juggling and for some students also constitutes a joyful experience: ‘What was fun today was that I started to get a sense of rhythm’ (Henry).

A fruitful rhythm can be constructed differently depending on similar factors as was significant for grasping a pattern: (i) amount of objects, (ii) kind of objects, and (iii) how many people are juggling together. George found that music could help him find a rhythm whilst juggling with scarves:

Today I practised a lot of juggling with scarves together with music. I think music helps a lot such as for example when studying and running. I found that music helped me with finding a rhythm. I believe music with a slower



beat (BPM) wouldn't have helped as much as when I listened to the kind of music with higher beat (BPM) which also enhances your motivation. (George)

### Picture 3

Picture 3. George is juggling with scarves following music.

Arguably, the music could help him keep the rhythm by following the beat. This idea is clearly expressed by Vera: 'then I could decide that the bean bag should land in my hand every time I could hear a beat in the music.' Grasping a rhythm could also mean to count verbally on your own or together with peers although the 'counting' does not necessarily need to be expressed verbally. It could also be a kind of tacit bodily knowing as expressed by Cindy: 'I felt a need to stand up and move my whole body to get the rhythm again.'

### Preparing for next move in the landscape of juggling

Mastering juggling – regardless of number of objects, kinds of objects, whether one is doing individual, pair or group juggling – requires the juggler to constantly prepare for the next throwing and catching. Grasping this 'endless' preparation involves several aspects according to the students. Erica, for example, found a way to place the balls in her hands:

However, I felt in the end (of the lesson) some progress when juggling with three balls. I started to 'push' the ball forward when I had thrown the other ball from the same hand. Doing that made it possible to catch the ball behind the first one, then the ball didn't get stuck when it should be thrown. (Erica)

Even if the object did not get stuck, some students seemed to struggle with 'remembering' to throw objects with their 'wrong' hand. They are 'not used to' (John) catching with one hand whilst simultaneously throwing with the other.

Knowing how to prepare for the next throw and catch involves a fluid transition between catching and then throwing immediately thereafter. Linda 'stops throwing after one lap with three balls' and identifies this as a problem. Holly overcomes this difficulty by 'throwing the third ball as fast as possible after throwing the second one.' Felicia states that you have to pay attention to 'not only the ball that comes towards you but also the ball you are about to throw.' Through the films and the diaries, we can, however, note that many students choose different paths in order to know how to prepare for the continuous throwing and catching.

### Navigating one's position and throwing in the landscape

Navigating one's position and way of throwing is important in order to master juggling. If you juggle on your own you have to navigate your position and throwing so you can catch the object and make sure that the objects do not collide with each other. If you juggle with other people, the thrown object must be tossed in a way that your partner can catch it and that it does not collide with objects thrown to you.

### Picture 4

Picture 4. Two students juggle with volleyballs.

The students express frustration when realizing that they have to master navigating the balls and one's position:

What I did poorly today was when I juggled and that, I can never learn to throw upwards in a straight line, which means that I miss and have to start over again (Felix)

What I think was difficult today was to get the balls in a straight line up in the air, they flew forward sometimes which makes it more difficult to catch them and throw because you start to move forward (Henry)

Several students tend to throw the balls forward as Henry does and some of them need to lunge forward or run to catch the balls (see picture 5, below).

### Picture 5

Picture 5. Laura runs in order to catch the balls.

It seems to be important to change one's focus from catching to both catching and throwing so it is possible to navigate the thrown objects in order for them to land in the same place from which they were thrown. Annie notes that she must focus on 'how I throw' and Lynn concludes that she loses focus and 'starts focusing on catching the balls I already threw rather than throwing the next ball.' For some students the throwing and navigating is about synchronizing right and left hand. Victor suggests:

The most difficult thing is to throw the balls in synchrony and I noticed that with my left hand, I throw the ball a little bit too much to the left. (Victor)

However, Victor experiences this as a challenge to overcome because he thinks 'a challenge is always fun' (Victor). Another student, Philip, has overcome the difficulties with navigating his way of throwing and shows this by juggling with three balls while sitting on a bench. He uses the pattern throw-throw-catch-catch and the balls come land in his hands. He does not have to stretch or walk around in order to catch the balls. This is shown in picture number 6.

### Picture 6

Picture 6. Philip can navigate his way of throwing when juggling with three balls.

Navigating one's way of throwing seems to contribute to a feeling of control and a sense of knowing juggling. The students who feel that they must step or run forward in order to catch the balls do not get a sense of knowing juggling, even if one could say that they know juggling in a certain way.

## Discussion and concluding thoughts

When analyzing the data we asked: what does it mean, from the perspective of the learners, to know juggling and what different ways of knowing seem to be required in order to master juggling in different ways? Our findings suggest that in the group of students, four significant ways of knowing the landscape of juggling seemed to be important: grasping a pattern; grasping a rhythm; preparing for the next throw and catch, and navigating one's position and throwing. The investigation challenges the narrow view on ability as technique-based sport performance – which in the case of juggling might be something like 'juggling with three balls – by providing examples of what movement capability can mean in a movement landscape. In other words, developing students' capabilities (or knowings) is in focus, and the performance left in the background. Neither the sociological nor the motor learning research mentioned in the introduction have investigated abilities with this focus.

We asserted in the introduction that a prerequisite for discussing and negotiating the meaning(s) of ability in PE in line with recommendations made in sociologically-oriented PE research is identifying possible alternative meanings of ability focusing on for example movement capability. As the sociological research show, teachers' often implicit beliefs are powerful influencers on how ability is constructed (Hay and Macdonald 2010). These beliefs and expectations reflect dominant discourses of health and sport (Evans 2004). Our aim in investigating what movement capability can mean is an attempt to provide alternative ways of conceiving ability and thereby provide enhanced possibilities to make a difference for students' abilities through education. By doing this we follow up Evans' call for a discussion about the educational aim with the subject PE and an alternative view of ability, which still appears relevant a decade and a half later (Croston and Hills 2017; Quennerstedt 2019). There is, as Evans puts it, a need to be concerned about, discuss, identify and nurture the 'physical' dimension of ability in PE (Evans 2004, 100) if the subject claims to be of educational value. Although we are aware of the breadth of possible educational aims that PE could offer,

we argue that developing students' movement capabilities is a central task for PE teachers. The subject could then make a difference for those pupils that enter the subject without the kind of 'physical capital' that is related to sport and health.

Instead of planning the teaching and learning based on 'a traditional performance view of what the desired coordination pattern is that should be learned' (Newell and Ranganathan 2010, 23), we problematized the movement and asked the question 'what does it mean, from the perspective of the learners, to know juggling?' The findings suggest that knowing juggling for the learners is something other than (merely) demonstrating juggling as a technique.

Planning teaching and learning with the aim of enhancing students' juggling capability (or dancing, swimming, for instance), presenting, for example, grasping a pattern or a rhythm, or something not yet discerned, as learning goals differ from presenting learning goals as specific techniques, as it involves explorative and experiential aspects of knowing and learning in moving. Further, it is a way of making the learning goal more explicit in terms of what there is to know from the perspective of the learner. Doing this is a powerful aspect for enhancing learning (Carlgrén and Marton 2000; Redelius, Quennerstedt, and Öhman 2015). However, since we know that narrow views on ability are reflected also in the assumption that 'sport skills' are not possible to develop; it is something you 'have' or 'have not' (Larsson and Nyberg 2016; Warburton and Spray 2017; Wilkinson, Littlefair, and Barlow-Meade 2013), this view must also be challenged if PE should claim to be of educational value.

The aspects of knowing identified in this study, show what novices in juggling seem to be focally aware of. It is useful here to consider Polanyi's (2002) notion of personal knowledge. Along the learning process, learners continuously extend their personal background knowing (subsidiary awareness), which along the way becomes taken for granted and tacit, also encompassing what is the issue for the learners' focal awareness (Polanyi 2002, 55). This means that the students, as novices, in this study change their focal awareness as a result of their learning. This is an important issue for planning teaching and learning, since many classes comprise both novices and experts. Taking into account the learners' previous knowing of a movement landscape by providing opportunities to explore and discern aspects and their relationships is, we argue, an approach to ability as dynamic and socially constructed (Evans 2004). The students may experience that they can explore and negotiate what there is to know and that it is possible to know a movement landscape in different ways. In this way, the learners are also provided possibilities to contribute to the question of what there is to know thus developing their abilities to explore, come to know and, as Evans (2004) puts it 'access physical cultures.' Additionally, teaching and learning movement capability should involve a critical examination and discussion of how ability is configured in different physical cultures and how alternatives could look like. A focus on developing movement capability with this approach (rather than learning pre-determined movements) may be a promising way to challenge prevailing social constructed views on ability in PE.

In this investigation, we aimed at giving the students a view of knowing the landscape of juggling as possible different ways to master juggling. We cannot, however, be certain of having achieved this aim. The criteria for what counts as being 'good at sport' (good at juggling in a specific way) is a historical, social and cultural construction (see e.g. Evans 2004; Kirk 2010; Larsson and Quennerstedt 2012; Wilkinson, Littlefair, and Barlow-Meade 2013). The students in this study have probably experienced juggling performed by experts in different contexts and built a picture of what 'proper' juggling is like. This circumstance is the case also for the participating teachers in the study and even more important, for us in the research team. The way we, as researchers, conceive what it means to master juggling should be considered even more and challenged further.

We want to conclude this paper by stressing that investigating the meaning(s) of movement capability in different movement landscapes can provide alternative views on ability in PE, that take us beyond ability as performing technique based sport skills. Conceiving movement capabilities (different ways of knowing in moving) as an educational goal can make a difference for students that enter the subject without those 'physical abilities' that other students may have developed in sport outside school.

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## References

- Angrosino, M. V. 2005. "Recontextualizing Observation: Ethnography, Pedagogy, and the Prospects for a Progressive Political Agenda." In *Sage Handbook of Qualitative Research*, edited by N. Denzin and Y. Lincoln, 729–745. Thousand Oaks, CA: Sage.
- Barker, D., H. Bergentoft, and G. Nyberg. 2017. "What Would Physical Educators Know About Movement Education? A Review of Literature, 2006–2016." *Quest* 69 (4): 419–435.
- Barker, D., H. Larsson, and G. Nyberg. *in press*. "Exploring Movement Learning in Physical Education Using a Threshold Approach." *Journal of Teaching in Physical Education*.
- Berg, B. 2001. *Qualitative Research Methods for the Social Sciences*. 4th ed. Boston, MA: Allyn & Bacon.
- Carlgren, I. 2015. *Kunskapskulturer och undervisningspraktiker [Knowledge Cultures and Teaching Practices]*. Göteborg: Daidalos AB.
- Carlgren, I., and F. Marton. 2000. *Lärare av imorgon [Tomorrow's Teachers]*. Stockholm: Lärarförbundets förlag.
- Carlgren, I., and G. Nyberg. 2015. "Från ord till rörelser och dans – en analys av rörelsekunskandet i en dansuppgift [From Words to Movements to Dancing – an Analysis of Knowing in Dance]." *Forskning om Undervisning och Lärande/Research on Teaching and Learning*, nr 14: 24–40.
- Croston, A. 2013. "'A Clear and Obvious Ability to Perform Physical Activity': Revisiting Physical Education Teachers' Perceptions of Talent in PE and Sport." *Physical Education and Sport Pedagogy* 18 (1): 60–74.
- Croston, A., and L. A. Hills. 2017. "The Challenges of Widening 'Legitimate' Understandings of Ability Within Physical Education." *Sport, Education and Society* 22 (5): 618–634.
- Day, M. 2019. "Documents of Life: From Diaries to Autobiographies to Biographical Objects." In *Routledge Handbook of Qualitative Research in Sport and Exercise*, edited by Brett Smith and Andrew Sparkes, 177–188. Oxon: Routledge.
- Evans, J. 2004. "Making a Difference? Education and 'Ability' in Physical Education." *European Physical Education Review* 10 (1): 95–108.
- Evans, J., and D. Penney. 2008. "Levels on the Playing Field: The Social Construction of Physical 'Ability' in the Physical Education Curriculum." *Physical Education and Sport Pedagogy* 13 (1): 31–47.
- Hay, P., and I. Sahunter. 2006. "'Please Mr Hay, What are My Poss(abilities)?': Legitimation of Ability Through Physical Education Practices." *Sport, Education and Society* 11 (3): 293–310.
- Hay, P., and D. Macdonald. 2010. "Evidence for the Social Construction of Ability in Physical Education." *Sport, Education and Society* 15 (1): 1–18.
- Janik, A. 1996. *Kunskapsbegrepp i praktisk filosofi [Concept of Knowledge in Philosophy of Practice]*. Stockholm: Brutus Östlings Bokförlag Symposion.
- Jess, M., M. Atencio, and M. Thorburn. 2011. "Complexity Theory: Supporting Curriculum and Pedagogy Developments in Scottish Physical Education." *Sport, Education and Society* 16 (2): 179–199.
- Kirk, D. 2010. *Physical Education Futures*. London: Routledge.
- Larsson, H., and G. Nyberg. 2016. "'It Doesn't Matter how They Move Really, as Long as They Move.' Physical Education Teachers on Developing Their Students' Movement Capabilities." *Physical Education and Sport Pedagogy* 22 (2): 137–149.
- Larsson, H., and M. Quennerstedt. 2012. "Understanding Movement: A Sociocultural Approach to Exploring Moving Humans." *Quest* 64: 283–298.
- Light, R., and J. A. Kentel. 2015. "Mushin: Learning in Technique-Intensive Sports as a Process of Uniting Mind and Body Through Complex Learning Theory." *Physical Education and Sport Pedagogy* 20 (4): 381–396.
- Londos, M. 2010. "Spelet på fältet [The Playing on the Field]." PhD diss. Malmö: Holmbergs förlag.
- Miles, M. B., A. B. Huberman, and J. Saldaña. 2013. *Qualitative Data Analysis: A Methods Sourcebook*. USA: Sage.
- Moya, B., I. Renshaw, and K. Davids. 2016. "The Impact of Nonlinear Pedagogy on Physical Education Teacher Education Students' Intrinsic Motivation." *Physical Education and Sport Pedagogy* 21 (5): 517–538.

- Newell, K. M., and R. Ranganathan. 2010. "Instructions as Constraints in Motor Skill Acquisition." In *Motor Learning in Practice. A Constraints - led Approach*, edited by Ian Renshaw, Keith Davids, and Geert J.P. Savelsbergh, 17–32. London: Routledge.
- Nyberg, G. 2014. "Exploring "Knowings" in Human Movement: The Practical Knowledge of Pole-Vaulters." *European Physical Education Review* 20 (1): 72–89.
- Nyberg, G. 2015. "Developing a 'Somatic Velocimeter' – the Practical Knowledge of Freeskiers." *Qualitative Research in Sport, Exercise and Health* 7 (1): 109–124.
- Nyberg, G., and I. M. Carlgren. 2015. "Exploring Capability to Move–Somatic Grasping of House-Hopping." *Physical Education and Sport Pedagogy* 20 (6): 612–628.
- Nyberg, G., and H. Larsson. 2014. "Exploring 'What' to Learn in Physical Education." *Physical Education and Sport Pedagogy* 19 (2): 123–135.
- Polanyi, M. 1969. "The Logic of Tacit Inference." In *Knowing and Being Essays by Michael Polanyi*, edited by M. Green, 138–158. Chicago: The University of Chicago Press.
- Polanyi, M. 2002. *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge.
- Quennerstedt, M. 2019. "Healthy Physical Education - on the Possibility of Learning Health." *Physical Education and Sport Pedagogy* 24: 1–15.
- Redelius, K., M. Quennerstedt, and M. Öhman. 2015. "Communicating Aims and Learning Goals in Physical Education: Part of a Subject for Learning?" *Sport, Education and Society* 20 (5): 641–655.
- Ryle, G. 2009. *The Concept of Mind*. London: Routledge.
- Spradley, J. P. 1979. *The Ethnographic Interview*. New York: Holt, Rinehart & Winston.
- SRC (Swedish Research Council). 2017. *Good Research Practice*. <https://www.vr.se>.
- Tidén, A., K. Redelius, and S. Lundvall. 2017. "The Social Construction of Ability in Movement Assessment Tools." *Sport, Education and Society* 22 (6): 697–709.
- Tinning, R. 2010. *Pedagogy and Human Movement: Theory, Practice, Research*. London: Routledge.
- Warburton, E., and C. Spray. 2017. "Implicit Theories of Ability in Physical Education: Current Issues and Future Directions." *Journal of Teaching in Physical Education* 36: 252–261.
- Wilkinson, S., D. Littlefair, and L. Barlow-Meade. 2013. "What is Recognized as Ability in Physical Education? A Systematic Appraisal of how Ability and Ability Differences are Socially Constructed Within Mainstream Secondary School Physical Education." *European Physical Education Review* 19 (2): 147–164.
- Wright, J., and L. Burrows. 2006. "Re-conceiving Ability in Physical Education: A Social Analysis." *Sport Education and Society* 11 (3): 275–291.