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On the Role of Creativity in Sport

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BY
LUDVIG JOHAN TORP RASMUSSEN

DISSERTATION SUBMITTED 2019

AALBORG UNIVERSITY

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CV

Before initiating this PhD thesis, Ludvig Johan Torp Rasmussen was awarded a BSc and MSc in Sports Science at Aalborg University (AAU), including spending six months at The Creative Genius Semester, an interdisciplinary semester on creativity in theory and practice. Before and during his Ph.D. studies, Ludvig has been a supervisor and lecturer on topics such as creativity, coaching, learning, culture, talent development and sport psychology in the BSc and MSc Sports Science educations at AAU.

Besides the three original sub-studies that are elaborated in this PhD thesis, Ludvig has produced four other works during his PhD studies. This include one published chapter in *The Method of Imagination* (edited by Sheldon Brown and Luca Tateo) and one submitted chapter for *Introduction to Management and Commercialization in Sport* (edited by Kenneth Cortsen, Michael Kehr and Renate Nielsen). Further, he has collaborated with others on one accepted chapter for *The Encyclopaedia of Creativity* (edited by Mark Runco and Steven Pritzker) and one accepted chapter for *Creative Success in Teams* (edited by Alexander McKay, Roni Reiter-Palmon and James Kaufmann). In this 4-year period, Ludvig has also conducted an oral presentation of his second PhD study at the 5th International Conference on Qualitative Research in Sport, Exercise and Health, at the University of Chichester.

Based on his PhD studies, Ludvig has conducted several presentations and workshops on the role and application of creativity in sports for coaches and leaders from various sport contexts, including elite youth football coaches from Aalborg BK and FC Midtjylland (Danish Academies), members of Danish Forum for Sport Psychology (DIFO) and coaches and leaders from the Danish Handball Association (DHF).

Finally, during his PhD studies, Ludvig have collaborated with Christian Byrge, Niels Nygaard Rossing and Kenneth Cortsen on a book on "Creativity Training in Football – New Tools for Player Development", which will be finalised and submitted in 2020.

ENGLISH SUMMARY

To contribute to the dialogue about creativity among researchers and practitioners in sport, this PhD thesis challenges the recurrent idea that creativity is an in-game phenomenon reserved for match-determining players who are able to create chances and help the team win. Besides displaying such performance- and result-oriented beliefs concerning the role of creativity in sport, much research in the field is absorbed by defining, measuring and developing creativity as an outcome of particular kinds of sport participation rather than an integral part of development. Hence, this PhD thesis explores, challenges and generates new theoretical and practical perspectives on the role of creativity in competitive interaction sports, with specific focus on association football (soccer). Offering novel perspectives on what creativity is, why it is important and how it can be nurtured in sport, three sub-studies are based on a pragmatist position, which aims to emancipate theory and practice from limiting traditions.

Sub-study 1 propose a novel conceptual framework, covering a situated model of creative actions in sport which comprise the notions of normativity, intentionality and materiality. From this perspective, creativity is understood as exploration of novel action potentials. Rather than objectively creative match performances, this perspective regards subjective situated actions that exceed habitual actions and solves novel challenges. Exploring whether this new approach resonated with practical perspectives on creativity, *sub-study 2* rigorously explored, analysed and contrasted diverse conceptions of creativity in a Danish elite football context. This phenomenographic interview study generated 15 metaphors that embody qualitatively different conceptions of the meaning, value and application of creativity (and their relation), and highlight that certain orientations may entail limiting consequences for player development, participation and performance.

Challenging some of the practical perspectives generated in sub-study 2, action research was used in *sub-study 3* to portray an elite U17 football coach's preferred and undesired ways to apply creativity in practice. Here, a range of creativity concepts were used as tools to develop creativity exercises aiming to support the players exploration of unusual action possibilities, that is, facilitate creative actions as defined by sub-study 1. Although a variety of emancipative potentials were envisioned during the process, several ways to apply creativity as a developmental resource were rejected as inappropriate due to lacking transfer-value and reducing the football-specific quality of the training sessions. Moreover, the process was limited by a preference for efficiently helping the players to appear creative in matches rather than exploring creative actions during training.

Besides outlining the pragmatist principles that guided this research and elaborating the theoretical background, methodology and results of the sub-studies, this PhD thesis reviews the state-of-the-art in the field of creativity studies in sport and contrasts the new perspective to three predominant perspectives on sporting creativity. The thesis is concluded by clarifying the conceptual, methodological and practical contributions of the sub-studies.

DANSK RESUME

For at nuancere dialogen om kreativitet blandt forskere og praktikere i sport udfordrer denne Ph.d.-afhandling den populære ide at kreativitet er et kampspecifikt fænomen, der kun gælder for kampafgørende spillere der kan skabe chancer og dermed hjælpe deres hold med at vinde. Deslige præstations- og resultatorienterede tilgange medfører at de fleste forskere er optaget af at definere, måle og udvikle kreativitet som et mål for særlige idrætsdeltagelsesformer, frem for at se kreativitet som en betydningsfuld del af idrætsdeltagelsen i sig selv. Således er formålet med denne Ph.d.-afhandling at udforske, udfordre og generere teoretiske og praktiske perspektiver på kreativitetens rolle i idræt. Ved at udfordre eksisterende og udvikle nye forståelser for kreativitet, hvorfor kreativitet er vigtigt i idræt og hvordan den kan gives næring i praksis tages der i tre studier afsæt i et videnskabsteoretisk ståsted i pragmatismen, hvor målet bl.a. er at frigøre teori og praksis fra begrænsende traditioner.

Studie 1 udvikler en ny konceptuel ramme for kreativitet der omfatter en situeret model over former for kreative handlinger i sport. Modellen introducerer begreberne normativitet, intentionalitet og materialitet og deres betydning for kreativitet. Her forstås kreativitet som udforskning af uvante handlingspotentialer. Frem for objektivt kreative kamppræstationer omhandler dette subjektive og situerede handlinger der overskriver vanemæssige handlinger og løser nye udfordringer. Studiet argumenter for at understøttelsen af denne form for kreativitet bl.a. kan forbedre udøvernes idrætsoplevelser, handlingskapacitet og udvikling i form af at øget opfindsomhed, åbenhed og initiativ i forbindelse med at opsøge, skabe og løse nye opgaver. For at undersøge hvorvidt den nye tilgang resonerede med praktikeres perspektiver på kreativitet, analyserede *studie 2* de kvalitativt forskellige opfattelser af kreativitetens mening, værdi og anvendelse i fodbold. Studiet blev udført som et fæomenografisk interviewstudie i en Dansk elitefodboldklub, hvor analysen førte til 15 metaforer om kreativitetens potentielle roller i fodbold. Studiet fremhævede desuden at bestemte opfattelser kan have begrænsende konsekvenser for spillernes langsigtede udvikling, fortsatte deltagelse og endda deres præstation. For at udfordre hæmmende praktiske perspektiver fra studie 2 og bidrage med nye idéer blev aktionsforskning i *studie 3* brugt til at undersøge en elite U17 træners foretrukne og uønskede måder at træne kreativitet i fodbold. Målet var at designe nye øvelser, der kunne facilitere spillernes udforskning af uvante handlingspotentialer, altså kreative handlinger som defineret i studie 1. Selvom en række frigørende potentialer ved denne form for træning blev italesat og identificeret under aktionsforskningsprocessen blev mange former for kreativitetstræning afvist på grund af manglende transferværdi og fodboldfaglig kvalitet. Processen blev endvidere begrænset af en præference for så effektivt som muligt at spillerne med at fremstå kreative i kampe.

Ud over en redegørelse for pragmatiske principper der understøttede de tre studier og en uddybning af deres teoretiske og metodiske aspekter omfatter denne afhandling et komparativt review af kreativitetsforskningen i interaktiv konkurrenceidræt. Desuden gennemgås tre dominerende paradigmer inden for forskningen i sportslig kreativitet og sammenligner disse perspektiver med det nye perspektiv. Ph.d.-afhandling afrundes med en gennemgang af den konceptuelle, metodiske og praktiske bidrag.

ACKNOWLEDGEMENTS

Although a great deal of this PhD thesis is written in first person point of view, I could not have done this work without the support of others. First of all, I would like to express my sincere gratitude for the contribution made by my dear supervisors, Lars Domino Østergaard and Vlad Petre Glăveanu, for asking the right questions and for staying critical while giving me the freedom to challenge conventions.

Moreover, I would like to address my warmest appreciation to my

- daughter, for smiling every day
- girlfriend, for sacrificing so much of "our" time
- brother, for being my inspiration
- parents, for letting me find my own way
- participants, for welcoming me as a valuable outsider
- (prior and present) office mates, for not clearing my messy desk
- friends, for keeping inviting me to Champion League evenings
- colleagues, for not protesting when making them do weird exercises
- assessment committee, for taking the time to review this work
- dog, for getting some fresh air to clear my head
- and many more, for many other reasons

ADVISE TO READERS

As advised by prof. Svend Brinkmann at a PhD course on qualitative research, this PhD "Kappa" should be regarded as a travelogue, that is a process description that frames the project. Since my PhD studies have not been a smooth, one-directional research process, but developed along messy, iterative and elective phases, I want to avoid constructing ideal narratives by concealing the messy parts of my work.

With that said, this "Kappa" is inter alia intended to

- Outline the events and ideas that led me to do the sub-studies
- Describe the fundamental assumptions of my work
- Situate myself as a pragmatist creativity researcher in sport
- Elaborate on the theoretical and methodological considerations
- Clarify the research quality criteria that guided my sub-studies
- Clarify the conceptual, methodological and practical implications

During this thesis, I continuously refer to the three sub-studies, which are summarised in *chapter 2*. However, I kindly recommend you to read them before this "Kappa":

SS1: Rasmussen, L. J. T. R., Østergaard, L. D., & Glăveanu, V. P. (2019). Creativity as a developmental resource in sport training activities. *Sport, Education and Society*, 24(5), 491-506

SS2: Rasmussen, L. J. T. R., Glăveanu, V. P. & Østergaard, L. D. (2019). Exploring the multifaceted role of creativity in an elite football context. *Qualitative Research in Sport, Exercise and Health* (e-pub ahead of print), 1-19.

SS3: Rasmussen, L. J. T. R., Østergaard, L. D. & Glăveanu, V. P. (under review). "The principles are good, but need to be integrated in the right way": Experimenting with creativity in elite youth soccer". *Journal of Applied Sport Psychology*, submitted November 2019.

To avoid confusion, "football" refers to soccer (or association football) in this thesis.

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LIST OF ABBREVIATIONS

AR   Action research (*section 2.4.2.*)

CDF   Creativity Developmental Framework (*section 4.3.*)

CGS   Creative Genius Semester

DL   Differential Learning (*section 4.3.3.*)

DT   Divergent Thinking

GTS   Game Test Situations (*section 4.1.1.*)

NEC   Non-linear Emergent Creativity (*section 4.2.*)

SS1   Sub-study 1

SS2   Sub-study 2

SS3   Sub-study 3

TC   Tactical Creativity (*section 4.1.*)

TCSP   The Creative Soccer Platform (*section 1.1.*)

TTCT   Torrance Test of Creative Thinking (see endnotes)

Rikard Torp in memoriam

If you sign
80 papers
We'll be happy
Coorperators

And it has begun

Clear your gardens
Cut your acres
Pay your ticket
To future mall carts

Progress has begun
Money is your new sun

CHAPTER 1. INSPIRATION

As advised by Svend Brinkmann at a PhD course, one should dare to write about how ideas are generated – and what one has done to generate them. Thus, starting with the initiation of the investment years in my developmental pathway towards becoming a scholar of creativity in sport, this chapter describes how I became interested in the topic, and then outlines a range of issues that inspired the three sub-studies. Thereby, the chapter show some of the fundamental assumptions of my PhD studies.

1.1. SPONTANEOUS INVESTMENT

This PhD thesis arises from my 3rd and 4th semester on AAU's master in Sport Science, where I started to study creativity. I return to these endeavours shortly, but first, let's take a step back to my 2nd semester, where a series of coincidental events led me to discover the world of creativity. Half way through the semester, I had not found out what I was going to do on the 3rd semester, which covered the possibility to study at abroad universities or to take an internship at a local corporation. In one of my part time jobs, I was hanging up posters for the student organisation. One day, a poster had the catchy title "The Creative Genius Semester" (CGS) – an interdisciplinary semester on creativity, where all 3rd semester master students from AAU could apply.

A few days earlier, we played personality poker in a master course on team building. This game includes a stage where the participants give each other cards that describe particular behaviours such as "empathetic", "analytical" and "creative". I got the latter label. This concept was not part of our curriculum, but my impression was that this could only be a positive label. When evaluating the poker event with fellow students in my project group, they agreed that this was a perfect match, but I also found out that they did not only see this as a positive personal characteristic. They were getting tired of doing problem-based project work with me since I always generated many ideas and wanted to turn every stone, e.g., resulting in lengthy group meetings. Thus, I left the class a bit frustrated, but also more curios in learning about creativity.

Indeed, my tendency to generate many ideas has both been a resource and a challenge in the process of writing this PhD thesis. Sitting here at 1pm, with six weeks to go until submission, I have to persuade myself that I am creative, or at least, able to mark my actions with some characteristics of creative functioning, that is, stand up to conventions, overcome obstacles, take risks, be tolerant for ambiguity, resist premature closure and work close until deadlines (Sternberg, 2006)

Returning to the poster about becoming a creative genius, I took a spontaneous decision, send an application and was enrolled in 2013, which was the semester's maiden voyage. The goal of the semester was to develop a new idea within one's own field. This allowed me to step out of sports science, to see the things I have learned from new perspectives. Hence, I ended up casting the foundation for a new way to nurture creativity in football (Rasmussen & Østergaard, 2016), which was refined during my Master Thesis and accepted for publication before starting my PhD studies. This novel approach is a sport-specific version of The Creative Platform (TCP; Byrge & Hansen, 2009). With TCP as the main foundation, the CGS focused on how creative processes may be facilitated to create new products, how creative environments can

be created to build creative attitudes, and how *embodied* creativity training programs can develop participants' creative abilities to help them solve problems in their professional and everyday life (Byrge & Hansen, 2014). As opposed to *analytical* approaches, which focus on developing theoretical knowledge about creativity and related techniques through lectures, seminars and workshops, the embodied creativity training emphasises the use of certain kinds of creativity exercises (e.g., what can a wheelbarrow be used for in a kitchen?) to develop a range of creative competencies, e.g., horizontal thinking, that is, the ability to use knowledge from one area to generate ideas and solve problems within another (Byrge & Tang, 2015).

As evident throughout this thesis, these initial experiences with creativity theory and my creation of The Creative Soccer Platform (TCSP) have undoubtedly affected the ideas generated in my PhD studies. In this regard, I place myself in the intersection between research on sport coaching and research on creativity. To paraphrase Johansson (2004), intersectional ideas can establish new fields, provide a basis of directional creation for years to come and influence the world in unprecedented ways, but one can't be sure where one is going with intersectional ideas, since "they change the world in leaps along new directions" (p. 19). Hence, in my view, my role as a sport scientist with a special interest in creativity is to explore what the world of creativity has to offer the world of sport – and vice versa. On the one hand, the literature on creativity may offer perspectives that can open new possibilities in sport. On the other hand, sport offer an ecological context to study the phenomenon and thereby contribute to developing novel perspectives.

1.2. THE JOY OF CREATING

Returning to the CGS, we started each day with morning training, that is half an hour of creativity exercises. These were done on the middle of the floor in the class room, standing in front of a (often shifting) partner, helping each other generate (with certain rules, e.g., 'say YES to all ideas', 'all ideas are good ideas') as many ideas as possible for 'what is white, hard and eatable'. In other exercises, random picture cards were used to argue why the illustrated items were vital for 'a trip to mars' or how they could be used to 'survive the zombie apocalypse'. Often, we took turns telling and showing each other 'what happens next' a walk on a trail through an imaginative forest.

I found these sessions very joyful, since they allowed me to engage in the present moment without caring about what other people thought and thereby reach a flow where one idea took the other. Further, the experience of creating something new and peculiar together with the other students in the interdisciplinary and intercultural group helped us build relationships characterised by openness and curiosity to other perspectives. The exercises and following lectures were also beneficial in terms of becoming more aware about my own creative abilities. Similarly, research on the creative platform had shown that it develops participants' creative self-efficacy, that is, one's confidence in own creative ability (Byrge & Tang, 2015). Further, creative activities may unlock knowledge about our self, others and our world (Silvia et al., 2014). Hence, these practical experiences contributed to the idea of transferring TCP to football. I did so by turning the abovementioned *domain-general* creativity training

into *sport-specific* creativity training (e.g., help each other get a ball into a bucket in as many ways as possible; use movement-cues to develop new feints).

In my master thesis, I got the possibility to apply TCSP at a recreational U15 football team. This study showed how creativity-nurturing coaching can be designed with the principles of horizontal thinking, task focus, parallel thinking and no experienced judgment (Rasmussen & Østergaard, 2016). In combination, these principles facilitate creativity, defined as "unlimited application of bodily-kinaesthetic knowledge" (p. 11). This helped the U15s to apply many different sources of knowledge during idea generation (e.g., movies; other sports) without being limited by professional (e.g., actions treated as correct), personal (e.g., perceived ability), social (e.g., hierarchies) and cultural (e.g., worrying about what others think) boundaries. In turn, TCSP helped them engage in atypical activities and attempt actions that they had not dared or imagined to do during "normal" training sessions. Based on video observation of three 45-minute sessions, a focus group with four U15s, and an interview with the coach, we concluded that TCSP may establish a playful, autonomy-supportive, judgment-free and inclusive environment.

> "Instead of grumbles, scolding and complains, smiles and laughter typically accompanied the players' slip-ups, and despite making many faults, they continued trying new ideas." (Rasmussen & Østergaard, 2016, p. 16)

More specifically, the study showed that the U15 players enjoyed the process of creating and trying *horizontal* acts (i.e., abnormal ideas, not occurring in normal training) and difficult (i.e., known, but untested ideas). For example, one stated that it was "very cool […] fun and challenging" (p. 15) to constantly generate new ideas, and others said they enjoyed the "incredibly free" (p. 15) exercises, since they were allowed to decide what to do and to explore all ideas that came to mind. These data suggested that creative activities are intrinsically motivating by fulfilling the players' basic psychological needs of autonomy, competence and relatedness (Rasmussen & Østergaard, 2016). These results were very encouraging since autonomy-supportive coaching is associated with greater engagement (Curran, Hill, & Niemiec, 2013) and reduced dropout (Quested et al., 2013). Also, the creative activities were marked by (new kinds of) collaboration with teammates, led to learning new skills (i.e., inventing novel sport-specific techniques; creative abilities), and contributed to building a supportive environment, which are central aspects of player enjoyment in football (Tjomsland et al., 2016). Hence, additional focus on creativity may be vital in contexts where long-term goals of reaching an elite performance level result in lacking enjoyment and gratification in the short term (Côté & Abernethy, 2012).

As opposed to much creativity research in sport (see *chapter 4*) and many other domains, the TCSP study traced the specific activities and used qualitative methods to explore the benefits of being creative rather than measuring the effect on divergent thinking (DT) abilities, such as *fluency*, *flexibility* and *originality*[i]. Instead these variables were used to portray the players' actions in the training activities. Hence, the results of this study shaped my idea about treating creativity as a means and to develop an approach where creativity was at the heart of enjoyment and development. Further, with TCP and other creativity frameworks in my toolbox, I could not help notice palpable links between creativity and sports science. Some examples follow.

1.3. DEVELOPMENTAL POTENTIALS

First, the principle 'no experienced judgment' is intended to reduce the fear of making mistakes by eliminating as much judgment as possible during the creative process (e.g., negative feedback, corrections, the feeling of being observed) and encouraging a creative attitude where all ideas are treated as good ideas, no matter if they seem inappropriate or weird (Byrge & Hansen, 2009; 2014). In this regard, Reeves, Nicholls and McKenna (2009) showed that physical (e.g. losing the ball) and mental (i.e. wrong decisions) 'errors' and worries about making mistakes are some of the most salient stressors for adolescent football players since it may result in embarrassment, blame and reduced confidence. Based on the findings from the TCSP study, creative practices have the potential to dissolve this, at least momentarily. Furthermore, it could help the players learn how to create and to understand that making mistakes are both a vital part of creativity and the process of developing as a player.

Second, and in relation to the latter idea, scholars pinpoint creativity as a vital catalyser for handling minor and major challenges and stressors of everyday life (Byrge & Hansen, 2014; Carson & Runco, 1999). This is an key aspect of development in football (Holt & Dunn, 2004); especially for elite youth players, who face many challenges (Richardson, Gilbourne, & Littlewood, 2004) and stressors (Reeves et al., 2009). As Tanggaard (2014) argued, creativity is a "necessary ingredient in learning processes" that require us to handle tasks, situations and practices in new ways (p. 109). Hence it seemed that creativity could prove to be an important life-skill in and beyond sports. In this regard, Turnnidge, Côté and Hancock (2014) listed creativity as one of the cognitive skills that can be acquired in sports and transferred to other, non-sport settings. Although the meaning of creativity was not clarified, they cautioned that adult-driven activities could limit the creativity, ownership and sport engagement of the participating youth.

Third, the interrelatedness between creativity and learning has been widely studied in fields such as education (Ellis, 2016; Tanggaard, 2014) and the arts (Chemi, Jensen & Hersted, 2015). In the artistic context, creativity is seen "as a vehicle for learning, as a consequence or 'product/outcome' of learning, as a tool for learning, and as a structure and framing of learning" (Jensen, 2015, p. 152), which denotes a complex crisscrossing and continuity of the two concepts. Although the relation between creativity and learning is widely acknowledged, only a few studies on sporting creativity (e.g., Anderson, 2001; Campos, 2014) have included explicit ideas about these links, and in most cases, the scholars did not dwell at this intersection. Nevertheless, these cues indicate that it is a valuable idea to pursue in order to highlight the developmental benefits of creativity.

Recurrently making these kinds of horizontal transfers where concepts from the creativity domain could be used to resolve issues in sport domains contributed to my personal and empirical experiences of the experiential and developmental impact of creative activities. The above ideas were further stimulated by a few studies from sport contexts (also see *section 5.4.6.*). Most significantly, Kováč (1996) exposed a positive relationship between 14 to 17-year-old Slovakian football players' creative abilities (measured by TTCT[ii]) and their coaches' ratings of football performance. The study

also showed that higher creativity scores were positively related to better school grades. Suggesting a possible explanation for these results, additional measures showed that creative players coped easier with stress and were less affected by failures. These results led Kováč (1996) to designate creativity as a "distinct feature of talent" in sport (p. 65). Subsequently, Kováč (1998) showed that a 10-month off-field creativity program consisting of verbal divergent football problems, imaginative drawing and role play improved 17-year-old football talents' domain-general creativity (i.e., flexibility, but not fluency and originality; TTCT) and tended to improve sport-specific creativity (based on coach ratings of creative actions in matches). These promising results led others to suggest a need to consider creativity as a personality trait in talent identification (Morris, 2000; Reilly, Williams, Nevill, & Franks, 2000). Earlier, Duricek (1992) had also suggested creative potential as a criterion when recruiting gifted athletes and creativity as a developing factor of psychological potential. Resonating with the ideas developed in SS1, Duricek (1992) argued that sporting creativity is a product of the interaction between athletes' creative potential (e.g., self-confidence; self-assertion; creative self-concept; motor ability), the external conditions of sport performance (e.g., the natural, social and material environment) and the organisation and regulations of the psycho-social climate. Yet, he merely sketched these aspects, and he did no go into details. Also, at the initiation of my PhD studies, no scholars had adopted and pursued any of the above potentials.

Thus, I set out to elaborate on the developmental implications of creativity in sport. As clarified below, where I also give a general introduction to creativity research, this means that I turned towards the personally significant, everyday kinds of creativity.

1.4. WHAT COUNTS AS CREATIVE?

The roots of the creativity notion have been traced back to the Indo-European 'kere' (to grow), which developed via the Latin expression 'creatio' (to make grow) and eventually means "bring something new into being" (Weiner, 2000, cited by Glăveanu, 2013, p. 69). Today, what counts as 'new' spans from personal experiences of moments of insight to revolutionary creations with wide historical implications (Kozbelt, Beghetto, & Runco, 2010). For example, in an early collection of creativity conceptions, Rhodes (1961) identified more than 40 different definitions. Analysing their content, he found four broad categories, 1) attributes of creative *persons*, 2) cognitive mechanisms of creative *processes*, 3) characteristics of creative *product*s and 4) external *press* variables that condition creativity (i.e., environmental features). Since then, the four P's have had a large impact on creativity research, where researchers tend to take point of departure in one of these aspects. Still, it is generally accepted among creativity scholars that the dubious definition of creativity is "the single most fundamental problem in the field" (Simonton, 2012, p. 97)

As proposed by Glăveanu (2010a), the historical development of creativity research can be illuminated with the so-called 'HE', 'I' and 'WE' paradigms. The *He-paradigm* refers to traditional views of creativity, which regarded the divine inspiration of solitary geniuses. The unique capacities of these rare persons were beyond rational explanation and their activities were simply perceived as miracles – these scientists and artists were chosen by the gods to place new-fangled things on

earth. Facilitated by the APA presidential address of J. P. Guilford in 1950 (i.e., where divergent thinking was introduced), the psychological *I-paradigm* demystified and democratised the concept of creativity. Stressing that each and every person has a creative potential that can be developed over time, creative capacities were perceived as equally important in everyday and professional life. Hence, creativity became a focal topic in educational and organizational contexts. Finally, the *We-paradigm* incorporated the social psychology of creativity and argued that creativity fundamentally has a social and relational dimension. From this position, creativity should be understood not individually, but in relation to others (e.g., peers, contexts). This idea that ordinary individuals are only creative in relation to others means that they are not isolated thinkers but that their actions are constantly affected by their environment (Glăveanu, 2010a). To emphasize the relation between our personal attributes and social contexts, the complex interdependence between creators and the material and social world, and that culture is a constitutive part of creative actions and artefacts, the four P's have been adapted to the five A's, namely *actors, actions, artefacts, audiences* and *affordances,* which cannot be separated in research on creativity (Glăveanu, 2013). This stance was adopted in my PhD studies.

Additionally, Beghetto and Kaufman's (2007) levels of creative magnitude, that is, Big-C, Professional-C, Little-C and Mini-C creativity, are convenient to specify which kinds of novelty I was looking for at the beginning of my PhD studies (e.g., who an action, task, artifact, or solution is novel for). First of all, *Big-C creativity* is accomplished by eminent, ground-breaking geniuses (e.g., scientists and artists) that have produced new ideas that reach worldwide recognition (Helfand, Kaufman, & Beghetto, 2016). Here, one could mention the Fosbury flop, which has forever changed the way the high jump is performed (Goldenberg, Lowengart, Oreg, & Bar-Eli, 2010). Further, Big-C rely tremendously on the zeitgeist, as proposed by Csikszentmihalyi (1999) in his systems model, where the interaction between person, field (i.e., gatekeepers) and domain determines whether a given product is creative at a given time. From his perspective, culture consists of a range of *domains* (e.g., football), and what counts as novel and useful in the domain is decided by the *field*, which is made up of a range of gatekeepers (e.g., coaches, media, governing bodies, spectators, etc.), who play a key role in the life course of an idea. While some scholars only regard a product or person (artifact and its actor) as creative when reaching wide recognition in the domain, the perspective taken in this PhD thesis was driven by an interest in the types of novelty in the other end of the continuum.

Pro-C creativity is accomplished by successfully innovative professionals, who stand out from the rest, and/or continually enriches their practices to the benefit of their peers, but have still not achieved or might never reach "the lasting fame of Big-C" (Helfand et al., 2016, p. 20). This could be professional wing handballers who keep inventing new ways to do trick shots, or a professional football full-back who has developed a unique way to contribute to the offensive part of the game. Next, *Little-C creativity* refers to the small creative actions of everyday life that are recognised by the people that are affected by the ideas or those they are shared with. Such small bursts of creativity are linked to improved pursuits of one's goals in life, positive emotions and openness to experience (Helfand et al., 2016), and leads to happier

individuals, who are less stressed and more satisfied with their jobs (Forgeard & Kaufman, 2016). A little league baseball player that has invented a unique batting approach that is admired by teammates could be seen as little-c creative.

Finally, ***Mini-C creativity*** refers to personally novel and meaningful ideas, visions, actions, and interpretations (e.g., expose oneself to new tasks; discover new way to solve a task) that are not necessarily shared with anyone but oneself, and highlights the developmental and expressive aspects of creativity than help individuals grow (Helfand et al., 2016). A Mini-C creative insight in sport could be a novice basketball player who discover that he can use moves learned in taekwondo to deke his opponents, a young football player who suddenly realises that instead of playing sideways he could turn with the ball and dribble, or a swimmer who has uncovered a fresh way to make strength training fun.

Depending inter alia on the quality of idea generation abilities, curiosity and willingness to take risks, as well as the support and encouragements of significant others, Mini-C activities may reach the Little-C level. Further, it is widely accepted in creativity research that abundant experiences of being creative on the personal and everyday levels enhance the chance for Pro-C and even Big-C creativity at later stages of development (Helfand et al., 2016). However, I did not do this work to enhance the chance of fostering creative geniuses in sport (*section 5.4.2.*). Instead, conceptualising creativity as a developmental resource was initially driven by as a desire to promote Mini-C and Little-C (in SS1, unperceived action potentials resembles Mini-C since it is known in the context but not by the given player; unexploited and uninvented potentials both resemble Little-C). This was particularly interesting since everyone can experience Mini-C and Little-C creativity throughout the life-span (including those who do not consider themselves as creative), while Pro-C and especially Big-C are harder to accomplish. In this regard, a basic idea was that Mini-C and Little/Pro-C creative insights, actions and experiences would be equally important for young recreational and older professional sport participants, e.g., in terms of finding new ways to play or participate in their sport.

1.5. CREATIVITY CRISIS

The significance of studying the developmental role of creativity was boosted by research indicating that there was no room for self-directed creativity in organised sport – a field where the dominant practice forms may inhibit sport participants' creative abilities and thereby eliminate Mini-C and Little-C creative experiences and the entailed benefits. Most drastically, Bowers et al. (2014) tested the relationship between sport participation in organised (i.e., adult-driven activities) and unstructured (i.e., self-organised activities) settings during childhood (i.e., years 5 to 14) and domain-general creative thinking in adulthood. For U.S. university students, hours spent in organised sport were negatively related to TTCT measured *fluency*, *flexibility* and *originality*, while hours spent in unstructured sport was positively related to these variables. While the participants who spent an equal amount of time in organised and unstructured settings had the highest scores, those with the lowest scores spent less than a fourth of their total sport time in unstructured settings. Therefore, Bowers et al. (2014) suggested that adherence to prescriptions, fear of adult evaluation and low

amounts of playful experimentation and autonomy in organised sport may harm the development of creative abilities. In this regard, Kováč (1996) expressed the concern that sport talents may evade or resign in conditions "too saturated with high intensity" and "absence of developing creative thinking" (p. 65).

Further, in a Danish context, Nielsen and Stelter (2011) argued that high amounts of rule-based and adult-controlled activities in sport clubs pose few challenges for – and do not develop – children's *social creativity*; the ability to use their ingenuity and imagination in social contexts (i.e., described as a vital prerequisite to partake in and develop the post-industrial society). Observing self- and adult-organized movement activities among 6- to 11-year-olds, they noted that the physical surroundings of self-organised activities did not inspire specific playing possibilities. Therefore, children had to use their fantasy to invent funny games, take initiatives and creatively help each other modify rules of known games to satisfy the intentions of all participants. Contrarily, the adult controlled activities of institutionalised sport did not put the same demands on the children's negotiation and inventiveness. Here, fruitful sport participation largely depended on their social abilities to participate in authority-structures (e.g., listen to, understand and adhere to rules), and especially their sport-specific bodily abilities, which were "required to make the 'dictated' activity run and to achieve success and status in the sporting context" (p. 13).

Further, Weissensteiner et al. (2009) argued that contemporary lifestyles and societal changes (e.g., more distractors, more structure and less spare time) pose a major challenge to the creative development of future experts. As uncovered by interviews with expert cricket batsmen and coaches, these societal aspects may limit the access to safe, fun and stimulating play environments and, in turn, make young players rely excessively on others' feedback and instructions instead of inventing and solving their own problems. Hence, they had the impression that there was no room for creativity in coach-led training. Also, the reduced time in *creative play* opposed the batters' own developmental experiences, where their formative years was portrayed by innovation, experimentation and self-challenges, for example batting tasks with alternative bats, balls or shooting locations that "required creative shot execution" (p. 282). These distinctive kinds of self-organised, but sport-specific play activities were believed to foster problem-solving, adaptability and creativity. In turn, these early experiences were "fundamental to later sporting success" (p. 282), since superior batting technique included creativity, exemplified as an "ability to execute a shot to enforce a change in tactics and field placement" (p. 283).

Hence, encountering findings such as the above told me that there might be a creativity crisis in sport parallel to that found in the educational sector (from kindergarten to 12th grade), where creative thinking scores has declined significantly from the first TTCT studies in 1966 to those in 2008 (Kim, 2011). This issue was further signified by the amount of studies characterising traditional coaching as overly autocratic, prescriptive and controlling, with high amounts of specific instructions and corrective feedback (e.g., Ford, Yates, & Williams, 2010; Partington & Cushion, 2013). Hence, a core ambition of my PhD studies was to develop practical ideas that could contribute to prevent the potential creativity crisis in sport and to clarify whether it existed locally.

1.6. CREATIVE SUCCESS

However, at the same time as the above studies, others showed that sport coaches actually encouraged their players to be creative. For example, in Strachan, Côté and Deakin (2011) exploration of Canadian coaches' perspectives on the setting features in elite sport (i.e. diving, swimming and gymnastics), the allowance of athletes' creativity was seen as a part of the coaches' responsibility for developing athletes. Among others, their analysis of observations and interviews led to "taking the time to allow for creativity in athletes' skill development (i.e., allowing athletes to come up with different drills)" (p. 22) as a sub-category to forming *supportive relationships* in the environment. Similar themes were created in Mills, Butt, Maynard and Harwood's (2014) exploration of successful English football coaches' perceptions of the coaching practices that support optimal development settings during transition to the senior level. In an indictive analysis, the low-order theme "permit players to express their creativity" was linked to the high-order theme "engagement" (p. 142). Hence, permitting athletes to be creative was grasped as one of the many important psychosocial process to foster a "supportive, engaged and positive climate" (p. 143), and, in turn, creativity was believed to be conductive to development.

These studies highlight promotion of creativity as a key feature for developing sporting expertise (see *section 5.4.6.*). This is supported by Durand-Bush and Salmela (2002), who showed that two-time (or more) Olympic gold-medallists (e.g., ice hockey, wrestling, and freestyle skiing) perceived creativity as a key personal attribute in their maintenance years. Specifically, creativity enabled them to shape their performance, keep an edge over their opponents in the constantly evolving sports and be independent and innovative, by inventing new skills, moves and strategies that could be used in training and competition. The athletes experienced the demands to be creative and always adjust to new trends of their sports to be both pressuring and motivating. For example, one expressed that his main way to improve performance was "to try new things, to be innovative, and to always go forward" (p. 162) and that he was so creative that he regularly taught his coaches.

The above findings stress the long-term potential of applying creativity as a feature of the psychosocial design of player development settings, which was one of the main reasons for doing my PhD studies. However, in light of the undesirable findings from *section 1.5.,* I was somewhat perplexed. How could there be a creativity crisis in sport if coaches actually promoted creativity?

Obviously, the type of sport could have an impact. For example, creativity is part of the judgment of gymnastics and freestyle skiing. Also, there are contextual differences in terms of the quality of coaching, but the latter three studies could be rare exceptions from traditional coaching. However, since creativity was not the primary focus of the studies, its definition and application were not elaborated, e.g., what happened when the athletes came up with different drills or skills. Based on these studies, creativity merely seems to be actively 'encouraged' and 'allowed', not explicitly 'trained' or 'facilitated'. Yet, it unclear whether the coaches in these studies lacked the tools to develop creative abilities or merely were unaware about this possibility.

Other studies indicated that promotion of creativity do not necessarily lead to enhanced creativity. For example, Memmert (2010) traced the development of sport-

specific tactical creativity (see *chapter 4*) among 12- to 13-year-old talents (n = 70), who took part in a talent program developed by the German Football Association (DFB), comprising a weekly creativity-oriented session at four centres (content not specified), where the coaches had received guidelines by DFB. No general deteriorations or improvements were found. However, "descriptive divergent change tendencies" (p. 202) showed that more than half of the talents improved their creativity scores (e.g., 20 more than 10% and 5 more than 20%) after six months. In contrast, the scores e.g., decreased more than 10% for 14 and more than 20% for nine talents. Two players from one centre even had a higher TC than 95 % of the other talents (and one from another centre scored lower than 85 %). In-depth interviews with these players and their coaches could have been key to understand which personal qualities and social conditions that helped the players benefit from the program. However, the reason why some talents developed their creative abilities faster than others were not discussed since many factors were not controlled for (e.g., amount of deliberate play; other environments). Also, genetic potential, aptitude, talent (not specified), diverse training intensities and varying coaching quality were listed as possible explanations, but no player- or centre-specific data were provided. However, general declines in tactical intelligence at two centres were explained with difficulties in implementing the guidelines (not specified) and more focus on motor skill training.

1.7. LAY CONCEPTIONS

The difficulties in recognising and promoting creativity have been extensively studied in a range of educational contexts (for a systematic review, see Mullet et al., 2016), including primary physical education. In the latter context, research show that teachers are unaware, undecided and inconsistent regarding the establishment of creativity-fostering classroom milieus (Konstantinidou et al., 2013) and have contradicting ideas about creative pupils' characteristics (Konstantinidou et al., 2014). Since these findings were produced in non-competitive settings, they may not necessarily transfer to sport contexts (but they do resemble some of those in SS2, cf. *section 2.3.*).

Watching sports in television and reading sport news, I was curious how the term was used. This repeatedly confirmed my sensation that coaches' conceptions of creativity may be limited by sport-specific assumptions and prejudices. For example, a football media listed the top most creative football players based on the number of created scoring opportunities (Skjøth, 2015). Also, expert commentators often stated things like "they seem to have run out of ideas" (journalist), "they still need the last creative pass" (former pro attacker) and "they had the ball a lot, but they did not have much creativity" (former pro defender). Further, Michael Laudrup, probably the most renowned (and creative) Danish football players of all times, often used the term when commenting matches. For example, after saluting Eden Hazard for his ability to deke direct opponents and disturb defensive organisation (i.e., vs. Tottenham, May 2016) he said that "this has been lacking in many of Chelsea's matches this season. There has simply been too little creativity". In similar ways, the expert commentators often explained disappointing results with the absence of creativity. Accordingly, creativity seemed to be solely associated with the offensive part of the game and seen as something that enhance the team's chance of winning. A brief review of football

journals (Danner, 2012; Meinert & Wiegmann, 2012; Ouelette, 2004; Pill, 2007; Quinn, 2000) showed that similar conceptions were used when coaches explicitly describe creativity. For example, Quinn (2000) defined it as an ability "to solve technical and tactical problems in the most efficient manner" (p. 27). Similarly, Meinert and Wiegmann (2012) claim that creativity "means selecting the optimal solution for any situation and instantly executing it" (p. 38).

Similar ideas have been promoted by the Danish Football Association (Dansk Boldspil-Union, DBU) for more than a decade. In 2006, DBU launched "the red thread", which provided new foundations and directions for how to develop players from U15 to the national team. In the updated version from 2014, "creativity" is used as an eyecatcher on the front page, but only mentioned twice within the coaching material: First as a quality within the mental skills area of offensive midfielders (i.e., number 10) and then as a foundation for successful play in the finishing phase (DBU, 2014b). Besides only associating creativity with a single playing position and limiting its application to a small – but highly match-decisive – part of the game, I found it interesting that DBU only provided information about creativity to the elite segment of Danish football. Hence, the notion of creativity did not appear in coaching materials for children (DBU, 2011) or youth (DBU, 2012) football at recreational levels.

More specific guidelines are provided in DBU's (2014a) age-related coaching concept for elite youth players, which is based on a hierarchical model of making a successful team. This comprise 1) individual peak competencies, 2) structure (e.g., playing style; tactical agreements), 3) relational competencies (e.g., cooperation), 4) creativity (i.e., "the individualist in the collective") and 5) goal scoring (p. 11). Although defining creativity as "the ability to combine and translate existing knowledge and skills in a new and useful way" (p. 28) and stating that creative players "think beyond the traditional frame or think new solutions within the existing frame" (p. 29), DBU stresses that "creativity is not about inventing something new – but to have the ability and possibility to make some choices that creates new possibilities and are useful [in the game]" (p. 28). Emphasising efficient in-game creativity that respects team tactics, DBU advise coaches to consider how much structure and control could be sacrificed in exchange for creativity and to look for types who dare to break the structure.

Gathering the lay conceptions from above gave me idea that it was vital to explore the vocabulary of creativity in sport, specifically how it is articulated, grasped, stimulated and evaluated in a particular football context. The use of such narrow (i.e., attackers only) and oversimplified (i.e., efficient solutions) conceptions could be a possible interpretation of why organised sport participation might deprive creative abilities. At least, they did not align with the developmentally oriented commencements of my work (e.g., *section 1.2.* and *1.3.*) where creativity was associated with discovery, novelty and problem solving as well as transcendence of personal, professional, social and cultural boundaries. Contrarily, the most ideas from above only encompass one of the two elements in the common, bipartite creativity definition; *originality* and *effectiveness* (Runco & Jaeger 2012). Most academical definitions converge in not only requiring a solution to be *useful* (e.g., in terms of solving the open-ended task) to be deemed as creative, but also that it needs to be *novel* or *unusual*.

The significance of exploring and challenging coaches' conceptions was reinforced by the paradigms of *implicit theories* (Runco, 1999) and *social representations* (Moscovici, 2000). These perspectives agree that we generate conceptions to make our world less complex and more understandable. Although disagreeing whether conceptions of creativity are constructed within or in-between people, both frameworks argue that conceptions have evaluative and behavioural consequences (Glaveanu, 2011). Also, from the latter point of view, the formation of conceptions is implanted in identity processes, that is, "the positioning of the self in relation to the object of representation" (p. 58). Thus, affected by personal interests and cultural streams of knowledge, they regulate how we assess our own and others' creativity, and result in facilitating or restraining actions. In this way, coaches' understanding of creativity is likely to outline the strategies used to promote the players' creativity. These mechanisms may have unintended and limiting implications.

This was evident in a study of how creative routines were used to strengthen the creative capabilities of a successful American football team (Napier & Nilsson, 2006). In this club, the head coach was labelled as a *creative entrepreneur*, who balanced the relations between his players, special team coaches and the wider community to facilitate *creative collaboration*. Here, the overall aim was to create "plays for a game to surprise and overwhelm an opponent" (p. 273). As Napier and Nilsson (2006) showed, the creative process appeared symmetrical, smooth and egalitarian among the coaches, but the players were left out. Instead of individual decisions and crafting their own plays, their principal role was to repeatedly rehearse plays to be able to perform the fixed interaction patterns with perfect timing and high intensity. The entrepreneur focused on deploying these plays in "creative moments" of matches (p. 276). While the head coach was solely responsible for defining parameters for how flexible a team should be to surprise opponents, the players' primary task was to meritoriously execute the surprising and overwhelming plays.

This illuminates some of the conceivable practical consequences of creativity conceptions that are skewed towards in-game performances and getting results. Similar assumptions and consequences are uncovered by unravelling a paper entitled "*Good, better, creative*". In this study, Kempe and Memmert (2018) made three UEFA Pro- or A-licensed football coaches rate the level of creativity (i.e., unusualness on a scale from 1 to 10) in the last eight actions leading to each goal of the FIFA world cup in 2010 and 2014 as well as the UEFA Euro Cup 2016. Among more, the results show that the closer to the goal a pass was made, the higher score was given: The hockey-assist, the assist and the action leading to the shot were significantly more creative than the previous, with the assist most often receiving a high score. Also, high creativity in the two last actions leading to a successful goal scoring opportunity is a predictor of success (i.e., qualify to later rounds). Teams advancing to later rounds in the tournaments demonstrated greater creativity, with high scores in 63 % of their goals (Kempe & Memmert, 2018). On the one hand, these findings encourage the enactment of creativity programs at the highest performance level. On the other hand, it can be distinguished as an exclusive, result-oriented position that focus on offensive creativity in competitive matches, since the criteria was based on the ultimate aim of scoring a goal, rather than solving the sub-tasks in the game. Hence, omitting actions

from passing sequences that did not lead to goals suggests that creativity was only regarded as efficient actions, and disguise the creative solutions that may have taken place in other parts of the game. Finally, letting neutral experts rate the rareness of individual actions neglects personal (e.g., whether the action was new to the player), relational (e.g., whether the combination was new to the team) and cultural (e.g., whether the action is creative in relation the given nation's playing style) aspects.

Repeatedly facing the latter kinds of match- and result-oriented conceptions among sport practitioners and researchers alike (see also *chapter 4* and *5*), was a key reason why I set out to advance training- and development-perspectives on creativity.

1.8. QUALITATIVE DEFICIENCIES

When initiating my PhD studies there was a dearth of qualitative research on creativity in team ball sports. The most research in the field relied on quantitative methodologies and experiments to explain the role of various cognitive-perceptual factors or athletes' sport-participation histories, most often focusing on the amount of deliberate play and deliberate practice (*chapter 4*). Such studies depart from the day-to-day experiences of sport participants and are largely deprived of examples of specific kinds of training activities or coaching behaviour that could nurture creative abilities. Moreover, the multifaceted concept of creativity is not fully captured by psychometric evidence, which tend to neglect the cultural, contextual and situated aspects of creativity and abandon subjective voices and experiences. Besides the pragmatist position taken in my PhD studies (see *chapter 3*), several conception studies from educational contexts expound that creativity cannot be reduced to the cognitive abilities associated with idea generation (Bleakley, 2004; Kleiman, 2008). Creativity should not be judged by assessing the signs of divergent thinking, which is common practice in psychological interventions, since creativity "involves changes and transformations of people and social practices" (Tanggaard, 2014, p. 109).

Thus, I set out to transcend research where sporting creativity is measured, explained, and predicted by sport-specific versions of divergent thinking and cognitive factors, which abandons the role of the context and the day-to-day experiences of the actors involved. What was required was contextualized accounts of creativity in sport, which embrace the participants' own voices, regarding their conception of, application of, and experience with creativity. This calls for qualitative research methods, which focus on the multiplicity and complexity of subjective meanings that are shaped in social contexts (Smith & Caddick, 2012) and the "unique richness of local practices" which should also be reflected in the research methods, analysis and representation of data (Schinke, Smith, & McGannon, 2013, p. 463). The latter objectives of qualitative research align with the pragmatist philosophical tradition that was adopted throughout my PhD studies (see *chapter 3*).

Importantly, quantitative approaches are not rejected by pragmatists. As argued by Cornish and Gillespie (2009) "pragmatists are suspicious of any effort to privilege a single point of view" (p. 807). Ultimately, research quality and the choice of methods depends on the questions asked and the purposes served by different methods.

1.9. PURPOSE AND RESEARCH QUESTIONS

Based on the areas of inspiration outlined above and in response to the prevailing trend to reduce creativity to an efficient in-game capacity that should be developed to surprise and defeat opponents, my PhD studies aimed to nuance theoretical and practical dialogues about what creativity means in sport, why it is important for sport participants, and how it can be facilitated during sport training. Herein, the general purpose of my PhD studies was to explore and challenge extant, and to generate new, theoretical and practical perspectives on creativity and its value and application in sport. Accordingly, the primary task of this PhD thesis is to elaborate on the background of the sub-studies and clarify their conceptual, methodological and practical contribution to the field of creativity studies in sport.

These overall agendas are reflected in the research questions of the three substudies.

RQ1) How can creativity support player development in sport?

RQ2) How do football coaches understand creativity and its value and application?

RQ3) What are the potentials and obstacles of applying a developmental perspective on creativity in elite youth football training?

The above objectives are addressed by this PhD thesis, first with extended summaries of the three sub-studies in *chapter 2* and then with elaborate descriptions of their foundation in the pragmatist philosophical tradition in *chapter 3*. Next, the new perspective offered in SS1 is contrasted to three predominant perspectives on sporting creativity in *chapter 4*, and in *chapter 5*, I review the state-of-the-art in the field of creativity studies in sport in order to highlight the relevance the three sub-studies and the significance of their contributions. In *chapter 6,* I outline a range of research principles, quality criteria, and ethical principles that guided my work in relation to the sub-studies and reflect on some methodological and processual obstacles encountered in this regard. Finally, in *chapter 7*, I combine the findings of the sub-studies to provide an overview of the conceptual, methodological and practical contributions of this PhD thesis. In sum, this work is intended to expand and refine the sub-studies, address key questions in the field and point out future directions.

1.10. FOCUS ON COMPETITIVE INTERACTION SPORT

Inspired by Andersen, Ottesen and Thing (2018) review on team sport and health, I primarily focus on the creativity of sport participants in disciplines characterised by:

1. Competitive matches, separated by periods of skill development and optimisation
2. Activity of high intensity in unpredictable environments (i.e., in situ problem-solving)
3. Interaction between two sides (i.e., teams or individuals), with or without physical contact
4. Counteractive moves and shifts between offensive and defensive stages or initiatives
5. Rules on how to score goals/points during gameplay (e.g., not winning by coming first)

The match- and result-oriented creativity conceptions challenged by this PhD thesis do not necessarily appear in sports that do not involve the five above characteristics. This field could be characterised as *competitive interaction sport*. In other sports, in-game creativity is not vital to successful performances.

The match-oriented views are especially inherent in the notion of invasion games (e.g., football, handball, basketball), where two teams try to move into each other's territory, with the players interacting in man-to-man duels and combinations to break down their opponents' defence, create favourable situations for themselves and their team, solve the concrete game situation that occur and score goals/points (Ronglan, 2003). Hence, there is an aspect of problem solving in these open-ended, complex and unpredictable sports, which demand flexible, unexpected solutions and improvised solutions.

Further, Erhardt et al. (2014) argue that sports are typified by the logic of creativity or the logic of efficiency, which determine whether *decentralised* or *centralised* decision making is required While creativity is needed to immediately find alternative solutions in sports characterised by novel and uncertain challenges, efficient routines are required to apply formalized guidelines while operating maximally in more predictable and stable contexts, with clear division of labour (Erhardt et al., 2014). Sports where certain, pre-determined routines can be *rehearsed*, can be distinguished from those where a variety of situations and solutions can be *practiced* (Suits, 1988). Hence, the ideas presented in this PhD thesis are most applicable for decentralised sports that can be practiced, since the sub-studies e.g., suggest new ways to manipulate small sided games. This covers complex, open-ended sports, where the course of the game cannot be fully envisaged since each game situation can be solved in many ways, and thus, rehearsal is impossible. However, the broader ideas of this thesis in terms of nurturing generative capacities and supporting player development and enjoyment by means of facilitating creative actions during training are equally relevant in centralised sports that can be rehearsed.

In relation to item five, there is another kind of creativity involved in disciplines where the performance is evaluated by a panel of judges (e.g., use a new move that has been invented in training). Moreover, the analyses and conclusions of this PhD thesis may be less relevant in contexts such as physical education, aesthetic and expressive disciplines (e.g., dance), action and extreme sport (e.g., skateboarding; parkour), track and field, and endurance sport (e.g., running). Nevertheless, as an alternative to traditional prescriptive and authoritarian practice forms, the implications of the developmental perspective from SS1 may still be highly valuable in these sport contexts if no kinds of creativity takes place during training. Also, the metaphors from SS2 and the potentials and obstacles from SS3 may resonate with or inspire people from other contexts than football, where they were generated. There were three reasons why SS2 and SS3 focus on the context of football.

1) The rare opportunity to work with coaches from an elite football environment
2) Much research indicated that traditional football practices could limit creativity
3) Being the most popular sport in Denmark (Pilgaard & Rask, 2016) and across the world (Wesson, 2002), the studies might have a larger change of making an impact.

To avoid confusion, "football" refers to soccer (or association football) in this thesis.

CHAPTER 2. EXTENDED SUB-STUDY SUMMARIES

This chapter provides summaries of the three sub-studies connected to the present thesis. Reading this chapter will make it easier to grasp the many links made to the sub-studies throughout the rest of this thesis. If you are familiar with the original papers, please note that additional insights are provided in relation to theoretical ingredients, methodological considerations, results and practical implications.

2.1. ABSTRACTS

In SS1, creativity is understood as the playful process of exploring unusual action potentials (i.e., transcending norms, intentions and affordances). Among others, this fresh perspective emphasises that creative activities may catalyse growth (i.e., expand the players' horizons, purposes and responses), develop players with active habits (i.e., inventive and flexible rather than routine habits) and broaden their experiences by facilitating discovery, exploitation and origination of novel actions. Basically, creativity is grasped as a vital resource for all players' development and enjoyment in sport – not just for the performance of the few chosen ones (Rasmussen, Østergaard, & Glăveanu, 2019)

Exploring the perspective of Danish elite football coaches, SS2 outlines 15 metaphors that represent qualitatively different understandings of the meaning, value and application of creativity in sport, e.g., covering a set of learning-oriented (e.g., *INVENTION* and *STYLE*) and winning-oriented (e.g., *MAGIC*, *PRODUCTIVITY,* and *CHOREOGRAPHY*) conceptions. While the learning-oriented coaching interests entail promising potentials for development contexts in sports, the study uncovers the risk that winning-oriented coaching interest may have a pervasive impact on how coaches conceive of creativity. For example, the desire to win may entail coach-led activities where known, efficient solutions are intensively rehearsed, rather than player-centred tasks where novel, unfamiliar ideas and situations are curiously explored. Consequently, this may limit the ways in which the players experience their sport, reduce their creative abilities, and even limit their future performance level (Rasmussen, Glaveanu, & Østergaard, 2019).

SS3 is based on an action research (AR) process with a Danish elite football coach, where academic creativity concepts and principles were used as tools to play with in order to design and implement new creativity exercises on his U17 team. The study outlines a set of *potentials* (e.g., revitalising curiosity) and *obstacles* (e.g., requiring integration in established practice) for applying creativity in an elite football context. Although several unique potentials were envisioned and encountered, most remained somewhat unexploited due to a wide range of conceptual, pedagogical, cultural and political obstacles that needs to be overcome to utilize the full potentials of creativity in elite competitive interaction sport (Rasmussen, Glăveanu & Østergaard, in review).

2.2. CREATIVITY AS A DEVELOPMENTAL RESOURCE

The following sections elaborate on SS1 (Rasmussen et al., 2019a) which is extended with theoretical perspectives and ideas affecting the conceptualization process.

2.2.1. BACKGROUND

The study argues that creativity research has much to offer team ball sports, where the predominant perspectives focus on in-game, performance and match-oriented views, which treat creativity as an end rather than as a means of player development: "Creativity often becomes the point to reach, rather than the process or means of reaching" (SS1, p. 492). This was deemed problematic since it could lead to only connecting creativity with the best offensive players on a team. The study criticized that performative orientations may entail practice sessions that are robbed of creativity. Some conceptions of in-game creativity may not even be experienced as creative by the athlete. Hence, the purpose was "to conceptualize creativity as a developmental resource in sport training activities" (SS1, p. 492). Returning to the wonderings from *section 1.6.*, I was searching for concepts that could be used to grasp the simultaneous "crisis" and "success" situation of organised sport in terms of developing creative abilities. Such frameworks were needed to argue that the quality of coaching practices had a great impact on players' creativity, that players are formed by but also contribute to their environment, and basically that their cognitive, behavioural and emotional capacities are not only genetically determined or driven by biological needs or instincts. Such ideas were still relatively new within sport psychology and transcended a large proportion of creativity research.

Eventually support for these ideas were found in Vlad P. Glăveanu's socio-cultural notion on creative actions, Chris Shilling's body-sociology, and John Dewey's ideas about development. For these scholars, psychological traits are not entities in our minds, but situated and distributed qualities of action. Further, these perspectives could be united by a pragmatist philosophical position (see *chapter 3*), specifically by elaborating the notion of the player-environment transaction as a pivotal aspect of creativity in sport. Hence, we argued that creativity is intertwined with this complex and dynamic process, where the player's inner environment (e.g., dispositions, abilities, etc.) continually shapes, and is shaped by, the outer environment (e.g., material, social and historical aspects).

In other words, creative actions are situated in the transaction between the living human organism and the situation – neither in the external world nor within the mind or the body alone. From this perspective, creativity help us adapt our actions to new situations and thereby maintain the balance with the changing environment. It an active process of making, modifying or redefining situations. With the transaction as the point of scholarly departure, a pivotal task of our conceptualization in SS1 was to identify and elucidate transactional constituents of creativity in sport training.

2.2.2. CULTURAL PSYCHOLOGY

As described in SS1, cultural psychology view creativity as 'quality of human action' which is understood in relational, plural, cultural and developmental terms. For Glăveanu (2016), this perspective is relational since creativity is cultivated by means of interaction and communication. Thus, it is also plural. Further, it is cultural since creativity "both use and produce cultural forms" such as norms, objects, beliefs and values (p. 206). Finally, it is developmental since creativity is grasped in a situated, temporal manner. Hence, it is not reserved for childhood and impacts development on

microgenetic (moment person-environment interactions), ontogenetic (personal) and sociogenetic (historical) levels (Glăveanu, 2016). From this cultural-developmental perspective, new creations – in material or conceptual forms – emerge from the relation between the creator (i.e., player) and the others (e.g., the team) in continuous dialogue with the cultural repertoire of resources, that is symbols, language, values, representations and the established norms. Here, culture is not 'outside' but 'inside' all creative acts. Accordingly, Glăveanu (2010a) defined creativity as a

> "complex socio-cultural-psychological process that, through working with 'culturally-impregnated' materials within an intersubjective space, leads to the generation of artifacts that are evaluated as new and significant by one or more persons or communities at a given time" (p. 87).

Positioning SS1 in the we-paradigm (see *section 1.4.*) was particularly useful since it enabled studying creativity without exclusively looking at individualised or cognitive aspects (as done by extant research on sporting creativity, cf. *chapter 4*). Another benefit of adopting this social-psychological approach was that it was dynamic in that creativity could both be understood in relation to the self (i.e., personally new actions) and to the other (i.e., contextually new actions): "[C]reativity takes shape with the 'new artifact' becoming part of 'existing culture' (for self and/or community) and constantly alimenting the creative cycle" (Glăveanu 2010a, p. 87). Shaped in tensions between self, other, the actual and the possible, creativity has the potential to shape the identity of creator(s) and community.

In terms of developing players' generative capacities, that is, creative abilities, the socio-cultural perspective on creativity utilized in SS1 considers intra-psychological variables as dynamic and situated qualities of actions (that may be achieve by everyone), rather than static, innate predispositions of some who are more creative than others. Hence, creative abilities such as playfulness, openness to experience or curiosity should be grasped as "descriptors of action in concrete situations" (Glăveanu, 2016, p. 211). This does not mean that our personality is re-constructed in every situation. Depending on the given person's history of transactions with the environment, their bodily character may have sedimented and resulted in somewhat stable ways of acting in certain situations. These may include more or less appropriate states in terms of exploring novel action potentials. In addition, our social and material environment is patterned and has its own regularities. Hence, our 'personality' is best understood as a malleable product of the interaction between our predispositions and environmental consistency (this align with pragmatism, cf. *section 3.1.*). This makes it interesting to study how these patterns are disrupted through creativity.

Also, opposed to much psychological creativity research, personality traits are neither regarded as the origin nor the central variable in creative processes. Instead, research on creative actions needs to focus on "the meeting point between person and situation […] the interface between creator and world, where efforts are constantly made to adapt to and grow within a changing environment" (Glăveanu, 2016, p. 211). This is exactly what Shilling's (2005) framework allowed us to do – aided by Dewey – with the notion of the body as "a circuit which connects individuals with society" (p. 11).

2.2.3. BODY-SOCIOLOGY

Hence, the approach developed in SS1 initially explored and exploited ideas proposed in Shilling's book, '*Body in Culture, Technology and Society*', which offered a useful a framework to understand appearances and consequences of the person-environment transaction in sporting contexts (see *section 3.1.*). In this work, Shilling argues how perceptions of embodiment in the social theories of Karl Marx, Émile Durkheim and Georg Simmel are traditionally subsumed. Based on overlapping elements in the perspectives of these scholars, Shilling (2005) traces out a convergence theory where the body is conceptualized as a "multi-dimensional medium for the constitution of society" (p. 11). More specifically, the body is understood as "a source of, a location for and a means by which individuals are emotionally and physically positioned within and oriented towards society" (p. 11). A shortly described in SS1, the body's role as a source, location and means respectively refer to its generative properties, social receptivity and interactional centrality.

As a ***source*** for creating social life, our bodily existence is seen as "an active, generative phenomenon" (p. 10) where our creative capacities are utilized to actively alter or redefine the situation. In this regard, "the embodied subject is possessed of an intentional capacity for making a difference to the flow of daily life, and of socially creativity capacities resulting from its sensory and mobile character" (p. 10). These capacities provide us with the need and capacities to interfere with and shape our social environment, and the bodily habits we acquire in this process are central for the viability of society (Shilling, 2005). As a ***location*** for society, our bodily capacities and dispositions are intensely affected by features of the social environment such as rules, values, procedures, traditions and norms. Resulting in a deep impact on our development, some of the body's creative capacities may be lost because the body partially serves as a location for the inscription of economic, cultural, and social structures of society, which stimulates certain needs and abilities (at the expense of other), and shapes the embodied subject's appearances (Shilling, 2005).

Most importantly, as the interaction between the latter two features, the body acts as a "***means*** through which individuals are positioned within and oriented towards society" (p. 11, my emphasis). Hence, the body's generative capacity and society's prevailing structures "possess distinctive properties but are moulded and altered by the effects they have on each other" (p. 39). Essentially, the interactional centrality of the body variously attaches or distances us from society: The interaction can result in re-formation of our bodily character, which variously enhances or constrains our potentiality, and entail outcomes (i.e. actions) that reproduce or transform the social environment (Shilling, 2005). In other words, a player's creative abilities ("generative capacities" in Shilling's terminology) and the features of the training environment (e.g., norms, activities, etc.) variously enhance or constrain his or her potential in the given situation, that is, the chance to do a creative action. In this regard, we argued that improved coaching practices and/or creative abilities may enhance the player's potential in terms of their capacity for novel actions – in the moment and in the future – and this is vital for the players development in terms of finding new ways to engage with the environment or apply dispositions to novel aims. In turn, this may lead to transformed practices, e.g., if new ideas are included in shared action repertoires.

The above aspects inspired the creation of areas of creative positioning, that is, four kinds of transactional relationships resulting in enhanced or limited situated potential, and transformation or reproduction of social structures (i.e., development or status quo of the given sport environment). Hence, Shilling's work helped us clarify what creativity-nurturing and creativity-limiting player-environment transactions may look like and result in. In this regard, we mentioned in SS1 that the player's position within (or orientation towards) society tends to reproduce or transform social structures. To clarify, we did not attempt to make sharp divisions between reproducing and transforming, since it may be argued that we transform things as we reproduce them (as indicated by the model consisting of two crossing continuums).

In Shillings (2005) words, some are more "receptive to the effects of society" (p. 31) than others. Depending on the quality of a player's generative capacities (and past transactions) they may be more or less oriented towards reproducing practices (i.e., be a location; risk averse, predictable, submissive and conform), or towards shaping their sporting life (i.e., be a source; inventive, spontaneous, vigorous, independent, unpredictable, free) and thereby interfering with and transforming the environment. Moreover, our sensory engagement with the world influences whether we position ourselves towards reproducing or transforming the environment (Shilling, 2005). Some might not stand at ease with the rules and the available resources and thus "experience them as unpleasant, undesirable and worthy of transformation" (p. 65). This reflects pragmatist idea that creativity is needed when we are confronted with problems that need new solutions. In Shilling's (2005) scrutiny of the relationship between the body and society in a variety of social arenas, he identifies several issues in institutionalized sport. In this regard, he cautions that the increasing discipline and rigorousness of sport training, the search for and imperative on performativity and the rationalized goal-orientation in organized sport spheres threaten "to make the sporting body a pure location for societal forces" (p. 113) and, in turn, subjugate its capacities for creatively shaping the social environment.

> "The ubiquity of the sporting body to government, commerce and television has made the dominant practices associated with this sphere more prone to treat the body as a machine than any other sector of society […] searches out athletic talent at ever younger ages in its search for maximum performativity, and subjects even children's bodies to rigorous training regimes designed to push forward the boundaries of achievement." (p. 201)

In this regard, he warns us that the augmented systemization of sporting activities results in uniformity and the diminution of experiential qualities such as spontaneity, play and peculiarity, basically it denigrates human experience (Shilling, 2005). These ideas were based on '*Humo Ludens'*, where Huizinga argued that organised sports remove the body from "the peculiarities of the natural environment" which are better suited to individual expression and creativity than "the uniform geometrics" of sport arenas (cited by Shilling, 2005, p. 105). This links to the notion of affordances (as clarified in *section 2.2.5.*). Building on Shilling, who focused on the role of macro-level structures (e.g. nationalism, doping, and commercialism), we attend to micro-level structures affecting the moment-to-moment interaction between the player and the environment (norms, values, and practices).

Based on the above, SS1 stresses that there is an urgent need for "creativity-relevant ingredients" (p. 496) in person-environment transactions in sports, so the players are enabled to shape their social life in sports. Further, enhanced creativity may both "foster the development of players and environments" (SS1, p. 496). The main way to ensure this is to establish creativity-nurturing environments. Based on Shilling's (2005) ideas, this may develop our generative capacities, ensure experiential qualities and diversity, and expand experiences.

2.2.4. ESPOISING A BODILY PERSPECTIVE

When starting to conceptualize the approach presented SS1, we intended to propose the body as a vital source of knowledge and action (and thereby creativity) in sport activities. Before encountering the pragmatist and cultural psychological perspectives, the purpose of SS1 was to investigate how the nexus between creativity and learning in invasion games could be understood from a bodily-phenomenological perspective.

The idea was to use Merleau-Ponty's notions (e.g., the habitual body, the present body, body schema, abstract/concrete movement) to nominate the body as a key player for creative actions: As our "vehicle of being in", the world, the body is constantly partaking in an active exchange with the situation (Merleau-Ponty, 2013 [1945], p. 160). Suiting the transactional premise of SS1, the features of this body-world dialogue mould the basis of our action possibilities; it determines which life opportunities we unfold and which we imagine to be feasible (Engel, 2015). Reflecting the notion of intentionality from SS1 (as elaborated below), Merleau-Ponty stated that "my body appears to me as an attitude directed toward a certain existing or possible task" (2013, p. 114). Hence, the body is a sensitive interface that helps us register the world – not just a residence for our mind and soul, or a carrier of physiological attributes. It is not only responsible for bringing ideas into life, but also accountable for what kinds of ideas are accessible and pursued.

When initiating my PhD studies, I had only found three studies that had deliberately dwelled on the role of the body in sporting creativity (Aggerholm et al., 2011; Campos, 2014; Hopsicker, 2011). Since these directed most attention towards spontaneous, intuitive and imaginative in-game creative surprises and skilful coping of expert athletes, it could be argued that they mostly seized a single aspect of bodily rationality, namely *the habitual body*, where our actions are based on past experiences (Merleau-Ponty, 2013). Thus, it didn't make sense to explore *the present body*; an open orientation towards the world, or the concrete situation, where the body is experienced according to present and future demands (Merleau-Ponty, 2013). On the contrary, this make sense in a training context, where players have – or could be given – the possibility to create and explore new solutions. These kinds of challenges could make our body reappear. As argued by Shilling (2005),

> "it is when we are confronted with a practical problem that requires a novel solution that we often become acutely conscious of our bodies' positioning, capacities and inventiveness. Our body may fade from consciousness when we are engaged in instrumentality rational action, but this is action that is routinized, oriented towards the known, and mostly reproductive of a particular practice." (p. 59).

Translated into the terms of from SS1, our bodies fade from experience when they have become a pure *location* for the effects and normalized practices of a creativity-depriving training environment. Further, as argued by Breivik (2008) we are not only directed outwards through our bodies, but also inwards, and in sports, this bodily awareness is especially in play when athletes are learning new techniques, perfecting old ones, or standing in new or unfamiliar situations. Hence, when acting creatively during training, our body may befit an intentional object of perception; the body becomes a tool to make sense of – what can it do in the given situation? In this way, the body becomes a sign for us, a 'thing' we build knowledge about and have to make sense of. When intentionality is directed against our body, Gallagher (2005) argues, our actions are influenced by our *body image*, that is, "a system of perceptions, attitudes, and beliefs pertaining to one's own body" (p. 24). The body image is a dynamic set of intentional states which are divided in *body percept* (one's subjective experience of one's own body), *body concept* (one's conceptual understanding of bodies in general) and *body affect* (one's emotional attitude towards one's own body). These aspects are informed by each other and especially the body concept and body affect are affected by cultural and interpersonal features. Accordingly, an initial idea of SS1 was to elaborate how the body percept, concept and affect may be affected by player-environment transactions and thereby limit or enhance the players' situated capacity for creativity. However, the phenomenological accounts of the body were deselected since the body was at the forefront of Shilling's (2005) ideas;

> "we need to take seriously a family of closely related ideas associated with the body being developmentally and physically shaped and constrained, temperamentally and dispositionally directed, presentationally managed, and actively encouraged to act in certain ways rather than others." (p. 11)

2.2.5. A SITUATED MODEL

Next, Glăveanu's (2012) model of situated creative actions was used to elaborate on the definition, appearance, and expression of creativity, which Shilling (2005) left relatively untouched. As a foundation for this model, Glăveanu (2012) defined creativity as "the process of perceiving, exploiting, and 'generating' novel affordances during socially and materially situated activities" (p. 192). From this perspective, creative actions are located in exploratory processes where the players experiment with the unperceived, unexploited or uninvented affordances they identify and entertain (i.e., act on) in the course of action. Further, the model connects creativity with the notions of normativity, intentionality and materiality (which were regarded as transactional components in SS1). The latter was termed "affordances" in SS1, but should be changed to "materiality" since interactions between the social norms, the conceptual and physical materials (resources) and the given player's intentionality continuously shape the available affordances (i.e., action potentials) in the moment. Thus, every situation holds a horizon of possible actions, contingent on the person-environment transaction, and thus are constructed rather than predetermined.

The model was inspired by J. J. Gibson, who argued that human perception is driven by action; when perceiving things, we immediately see what we can do with it, rather than what it is. One interpretation of Gibson's work is that he grasped affordances as

static, predetermined and independent features that guide actions pre-reflectively. Refining this perspective, Glăveanu (2012) proposed that objects should be conceptualized as dynamic affordances, and this potentiality forms a link between affordances and creativity. Thus, it was coined as a model of 'the possible'. Since Glăveanu (2012) did not elaborate on what kinds of intentionality, normativity or materiality are relevant for creative actions, he encouraged scholars to refine the model in terms of making more specific models to uncover ways to nurture the exploration of novel affordances (i.e., action potentials).

In this regard, we utilized a range of scholars, but especially Dewey, to intensify our grip on the transactional ingredients that may stimulate the exploratory process of discovering unperceived actions, utilizing unexploited actions or originating uninvented actions. Reflecting the definition of creativity, these kinds of novelty are connected to the notions of intentionality, normativity and materiality, respectively.

- First, *unperceived action potentials* are not discovered due to the given player's usual intentional relationship with the environment. These affordances are perceived and used by others and do not violate the norms, but the given player does not notice them.
- Second, *unexploited action potentials* are not utilised due to social and cultural norms, values, scripts, etc. in the given situations, but would suit the player's intentional orientation to the world and is possible given the present material conditions.
- Third, *uninvented action potentials* are generated by combining or transforming extant tools, objects and resources by means of a changed directionality of action (i.e., intentionality), e.g., using the ball in a way that has never been done in the specific environment but is immediately accepted as valuable when invented, and thereby may be adopted by peers.

Further, a fourth kind of 'novelty' could be added to the three suggested in SS1, namely *unattempted action potentials*. Pointing to the fact that we do not only enact affordances, but also can think about them, this regards difficult actions that are known by the player and included in the norms, but are difficult to do in the given situation due to lacking technical or physical skills. Therefore, the player might be afraid of making mistakes. However, if relaxed normative expectations or changing intentionalities help a player try previously unattempted actions on their own initiative then it would be regarded as a creative action, since this exceeds what the player usually does in the given situation. In this regard, research has shown that players' motor capability to perform the imagined actions may limit the quantity and originality of explored ideas (Moraru, Memmert, & van der Kamp, 2016). Nevertheless, to avoid limiting the creative process, players have to enact all kinds of affordances, and actions should not just be discarded if not working in the first attempt or in the given situation. Incomplete actions could lead to discovery of more refined actions possibilities and trying all kids of ideas could advance their capacity for novel actions. Accordingly, exploration of novel action possibilities involves a high risk making mistakes or looking stupid, which normally entail usual actions (Byrge & Hansen, 2014; Carson & Runco, 1999), whereas, in divergent thinking tasks, there are less consequences of proposing abnormal, playful and inappropriate ideas, and the body is not a limitation.

As argued in SS1, supporting these kinds of novelty diverges from traditional practices in sport. For example, many coaches may prefer to prescriptively deliver the unperceived potentials to players rather than creating conditions where they can be discovered. Also, as demonstrated in SS3, coaches may resist players' attempts in doing unexploited actions (e.g., if the action is not match-relevant), and disregard the idea that the player and team will benefit from inventing novel action possibilities. Based on SS2, many coaches simply encourage players to try new things in usual activities rather than nurturing the players' generative capacities or creating novel material conditions where the space of usual actions is so small that creative actions are required. As summarised below we primarily used John Dewey's ideas to clarify the developmental impact of creativity.

Figure 1: Adapted from Rasmussen et al. (2019, p. 497). The configuration of a given player's landscape of action potentials at any given moment depends on the cultural norms (e.g. what is normally valued), the material condition (e.g., type of ball; number and placement of teammates), their intentionality (i.e. the way they meet the task) and their capability (i.e., technical skills). The model reveals (at least) four kinds of creative actions, namely exploration of unperceived (UP), unattempted (UA), unexploited (UE) and uninvented (UE) action potentials. At the spaces where only two circles areas overlap, we have areas of possibility that are even harder to reach.

2.2.6. HABITS AND GROWTH

Of particular interest for the situated model in SS1 is the notion of 'usual actions', which regard actions the given player normally uses in a given situation (i.e., action where usual norms, intentions and materials overlap and no kind of novelty is introduced). Hence, the exploration of novel action potentials transcends the space of the usual by "acting on the border of the possible" (SS1, p. 498). Exploring the border between the actual and the possible may lead to discovering, inventing and exploiting unusual action possibilities that may eventually become part of the player's usual actions. For Dewey (1916) "learning may take place under such conditions that from

the standpoint of the learner there is genuine discovery" (p. 303). Also, acting on ideas in active exploration and undergoing their consequences is a central aspect of sense-making and learning (Dewey, 1916). Accordingly, from a pragmatist position, learning can be seen as an expanded capacity for action. Thus, creativity should not be regarded as the outcome of learning, but as an integral element of it – from childhood to adulthood (Jensen, 2015).

Further, Dewey's (1916) notions of active habits and growth were used to clarify the potential impact of forming creativity-nurturing environments. The exploration of novel affordances requires – and thus develops – ***active habits***, which "involve thought, invention, and initiative in applying capacities to new aims" (Dewey, 1916, p. 52) and help the players adapt to new situations and to actively control the environment by shaping it to their purposes. Active habits are nurtured by means of open-ended activities, continuous readjustments to new environing conditions, and varied, elastic use of capacities (Dewey, 1916). Such activities are also beneficial for ***growth*** which regards "constant expansion of horizons and consequent formation of new purposes and new responses" to deal with and shape the environment (Dewey 1916, p. 175). As opposed to active habits, routine habits (i.e., fixed ways of acting) are deprived of originality, openmindedness, freshness, differential expression and growth. For Dewey (1916), these may be wiped out by mechanical repetition, deliberate pursuits of fixed ends and desire for procedural uniformity, external efficiency and quick results. As elaborated below, such conditions could result in creativity-limiting intentional states. Also, for Dewey,

> "it is more important to keep alive a creative and constructive attitude than to secure an external perfection by engaging the pupil's action in too minute and too closely regulated pieces of work." (1916, p. 197)

2.2.7. CREATIVE INTENTIONALITY

As described in SS1, intentionality refers the directedness or aboutness of our actions, not in terms of specific goals, but an action orientation towards certain aspects of the world, having a purpose with our actions. Examples spanned from "showing off" and "wining at all costs" to "having fun with friends" and "experimenting with ideas" (SS1, p. 499). In Dewey's (1916) terms, and reflecting his idea about the continuity between mind and body, such "habits of mind" supply the "habits of the eye and hand" with their significance (p. 49) by exciting diverse organic responses to the situation. Which kinds that facilitates creativity depends on the given player's usual intentional relationship with the environment and the quality of other transactional inputs.

With Dewey, it was argued that playfulness and openmindedness facilitate exploration of novel action potentials. ***Playfulness*** is a mental attitude that enables intrinsically joyful actions and a capacity to draw immediate satisfaction from activities without worrying about practical or theoretical utility, consequences or accomplishments (Dewey, 1913). When genuinely playing, actions are not limited by norms, but marked by "the unforced response of one's own individuality" (Dewey, 1916, p. 303). Accompanying play, ***openmindedness*** regards "accessibility of mind to any and every consideration that will throw light upon the situation" (1916, p. 175). These two transactional ingredients may stimulate creative actions, and, in turn, growth, which

require "an active disposition to welcome points of view hitherto alien; an active desire to entertain considerations which modify existing purposes" (1916, p. 175).

In addition to the ideas from SS1, the Danish life-philosopher, Ludvig Feilberg's concepts of *possibility-reducing* or *possibility-increasing* states (Pahuus, 1995) could be used to grasp a given player's action intentionality. Specifically, the possibility-increasing states may provide novelty- or possibility-value in terms of creative actions. Similar to Dewey, Feilberg sees openness as a possibility-increasing state. Particularly, Feilberg's notion of openness as *self-forgetting absorbedness* (in Danish "selvforglemmende optagethed") resembles Dewey's account of play, since this wholehearted, engaged and unbound state is freed from self-control, disturbing thoughts, worries, and desires to master selected features of the world. Feilberg argues that when forgetting ourselves, we think in new ways and generate ideas. Conversely, possibility-reducing states are saturated by values of diligence; we are regulated in certain ways and retain given and preconceived meanings (Pahuus, 2010). Thus, from Feilberg's perspective, the players' action possibilities would be limited by exertion, determination and exorbitant desire to play by the book or be shaped by others.

Other kinds of intentionality have been identified in the extant research on creativity in sport, where scholars typically suggest a universal kind of attitude required to be creative, rather than suggesting different ones that can be explored. For example, Campos (2014) understands spontaneity as "that freshness in our way of approaching the activity" which "revitalizes play by renewing the courses that play may take, by changing its paths, and preventing it from becoming routine and ordinary" (p. 58). Also, Hopsicker (2011) argue that a risk-taking attitude – a vital benchmark of becoming a sporting genius – involve having developed a "comfortable attitude of not knowing what will come next" (p. 21). Rather than seeing these as the golden standard for creative performances, the idea was that creating tasks where players are required to inhabit such kinds of orientations towards the world (or any intention unfamiliar to them) could facilitate exploration of novel action potentials.

2.2.8. CONTRIBUTION

In sum, SS1 treats creativity as a developmental resource in sport training activities. The exploration of novel action possibilities is valuable in terms of 1) enhancing the players' situated potential by augmenting the chance originating personally or socially meaningful actions, 2) enlarging and enriching the players' actions and experiences as opposed to prescriptive coaching, 3) stimulating the players' intrinsic motivation and thereby maintain their participation, 4) stimulating the players' growth and enhancing their capacity for novel action in the future, and 5) develop creative abilities such as open-mindedness and playfulness that may consolidate as habits of mind. Altogether, the above aspects improve players capacity to "search for, [explore,] create, and handle unpredictable and novel situations in sport" (SS1, p. 503). Thereby, it was also argued that generative capacities are important for sport performance.

Further practical recommendations were provided for how the player-environment transaction could be modified to facilitate creative actions. This was specifically based on the transactional ingredients of intentionality, normativity and materiality. Besides prohibiting players to act as usual and challenging their usual intentions, it was argued

that players should "identify, explore and enact unusual action possibilities, occupy and utilize unfamiliar intentions, and try all kinds of actions, no matter if thinking they cannot, or consider them inapplicable" (p. 502). More specific ideas regarded the design of open-ended tasks, novel modifications of small-sided games, challenges of sport-specific assumptions, and employment of different materials, e.g., balls (SS1, p. 502). In SS3, these ideas were used to design and evaluate creativity exercises.

2.2.9. FROM PERFORMERS TO PARTICIPANTS

SS1 ends with the statement that "the developmental benefits of creativity could apply to all players, at all levels" (p. 503). However, when conceptualizing SS1, I initially intended to focus on talents and elite players, since high-performance sports was also the context of much of the research that I aimed to challenge. Further, I had identified several interesting links between the concepts of talent and creativity that were hard to let go of (see *section 1.3.*). For example, Henriksen (2010) defined talent as a

> "set of competencies and skills developed on the basis of innate potential and of multiyear interactions with the environment – for example training and competitions – as well as the ability to exploit strengths and compensate for the weakness of the environment and to contribute to its development." (p. 161)

In this regard, the last part of his definition is often ignored, but for me, this formed palpable links between creativity and talent. For example, the initial idea of SS1 was to argue how the capacity to explore novel action possibilities could be vital for talents to compensate for lack of environmental resources, utilize environmental benefits in novel ways, and generating novel and meaningful ideas that progress day-to-day practice or provide performance benefits. Indeed, creativity is important in unfamiliar, uncertain and disturbed situations and regards exploring the situation – and its possibilities – in an open and curious manner (SS1; Dewey, 1916; Tanggaard, 2014). Further, reflecting the person-environment transaction, Henriksen (2010) defines talent development as

> "the progressive mutual accommodation that takes place between an aspiring athlete and a composite and dynamic sporting and non-sporting environment that supports the development of the personal, psycho-social and sport-specific skills required for the pursuit of an elite athletic career." (160)

Hence, the initial idea was to argue why generative capacities could be important psycho-social skills, helping the athletes develop. Based on pragmatism (see *chapter 3*), creativity is needed in indeterminate situations where habitual actions are inapt (i.e., require usual actions and exploration of possibilities). Similarly, as described in *section 1.3.*, scholars pinpoint creativity as an important catalyser to handle the diverse challenges of everyday life (Byrge & Hansen, 2014; Carson & Runco, 1999).

So why skip the focus on high-performance sport? This choice reflected pragmatist values such as democracy and equality (*section 3.5.*), and with point of departure in a mini-c conception of creativity (*section 1.4.*), it made more sense to challenge the idea that (efficient in-game) creativity requires a high level of expertise (*section 5.4.2.*). This is part of the problems of treating creativity as an end, as criticised in SS1, and often leads to arguments that high amounts of deliberate practice of sport-specific skills is required to develop creativity (Hopsicker, 2011; Leso, Dias, Ferreira, Gama,

& Couceiro, 2017; Memmert, Baker, & Bertsch, 2010). Certainly, intuitive skills of a habituated body are vital for in-game creative deception (Aggerholm et al., 2011) but, in SS1, I wanted to make a case for the potential impact of developing creativity-specific skills and competencies through creative training activities. Third, the idea that creativity, e.g., entail expanded experiences and enhanced enjoyment is not only vital for talents, but for all participants in sport, to sustain development and participation, so it would be inapt to limit the target group to high-performance sport.

2.2.10. APPLICATION POTENTIALS

As mentioned in SS1, the models presented could also help coaches, sport psychologists, creativity consultants and others grasp a player's situated potential. In this regard, the new concepts could be used as tools to help players understand themselves and their developmental situation, that is, whether their way to participate and compete in their sport of choice (intentionality) and certain features of their training context (normativity; materiality) are appropriate in terms of exploring unusual actions, developing generative capacities, and whether this situation is desirable for them. These aspects may also help coaches become more aware of which kind of environment they are creating for their players. These envisioned, yet untested, implications should recognise – and help the players understand – that their situated potential is shaped by the past, present and future interplay between their internal (e.g., generative capacities) and external milieus (e.g. coaching practices; football culture).

To grasp how the player's situated potential is influenced by environmental features, it is vital to employ an external view. In this regard, the normativity (e.g., cultural coaching standards, values and procedures), intentionality (e.g., the environment's influence the player's orientation towards the world; whether diverse perspectives are entertained) and materiality (e.g., the degree of repetition or variability of training, and the application of unfamiliar tasks) of the given training should be enquired.

From an internal perspective, one approach could be to explore whether a player is able to (or authorized to) utilize unexploited, generate uninvented and discover unperceived action potentials, or dares to act when identifying these varieties of novel affordances. This could lead to distinguishing generative capacities that characterise the player's action, whether other or refined capacities are needed, and, in turn, enhance their situated potential. The framework may help athletes appreciate that they are creative (or how they can be it) although they are not seen as creative players. In this regard, creative actions may unlock players' knowledge about themselves, their teammates and their environment – even for those who don't see themselves as creative players. This could be assisted by scrutinising the player's assumptions about which kinds of actions are appropriate during training or matches (e.g., normativity; what they think they *should* do) and how they usually meet different kinds of situations during training (e.g., (un)familiar activities) or challenges in their everyday life (e.g., intentionality; how it affects what they *would* do) and help them understand why it could be useful to explore other ways to face the game.

These ideas may be clarified with Shweder (1990) who argue that a person´s intentionality is amplified or confined by the intentionality of the environment, which forms *positive* or *negative* relationships, respectively. Transferred to sport, this

intentional relationship is *active* if players create and select their own actions, and *reactive* if the coach creates and selects the actions based on his/her perception of the players' intentionality. Further, the relationship is *passive* if the player is forced to live "in an intentional world created or selected by others for others or for themselves" (Shweder, 1990). The latter may occur when coaches want their players to do specific things to help the team win. With SS1, initiatives to nurture creativity should entail active relationships, since creative actions are "perceived", "generated" or "exploited" by the given player – not "delivered" by others.

Yet, the unusual intentionality could be delivered to help the player discover new action possibilities (e.g., special tasks, roles or rules that require players to face the game in other ways). Depending on a player´s usual intentionality, initiatives in facilitating creative actions may result in positive-active or negative-active relationships. The key here is to avoid the *passive* relationships. This may happen when a player with a possibility-increasing intentionality is forced into a *negative-passive* relationship, since the controlling and prejudiced environment rejects all attempts at unexploited or uninvented actions, and thereby converts the player's intention towards reproduction. If not aligning to the coach-determined regulations, they might be perceived as rebels who do not do what they are told, be removed from the team, or lose their interest in the sport. To prevent such kinds of *negative-passive* or *negative-reactive* relationships, creativity-nurturing initiatives should be negotiated with the players to make new-fangled activities more meaningful.

2.3. METAPHORS OF CREATIVITY

The following recaps SS2 (Rasmussen et al., 2019b), elaborates its methodology, its relation to SS3, and adds data to the results to enhance transparency, among others.

2.3.1. BACKGROUND

On the one hand, SS2 argued that the multiple theoretical conceptualizations of creativity in sport may be bewildering for practitioners. On the other hand, enhanced awareness of these diverse possibilities may be key to reflect on one's assumptions and to consider the positive and negative consequences of one's approach.

Thus, SS2 argued that it was unfortunate that most research on sporting creativity is "largely preoccupied with [the development of] objective creative performances that help teams be victorious, rather than what subjective creative processes can do for players, how they change them, enlarge their experiences, and expand their future possibilities" (SS2, p. 2). In this regard, a few studies exemplified that creativity has many potentials (e.g., coping, confidence and habit changes) that are not recognized by the predominant research. This made it interesting to explore the variation of conceptions that "develop, become legitimated and operate" in a particular context to the disadvantage of other possibilities (SS2, p. 2).

Based on the notion of social representations (*section 1.7.*), Glăveanu (2011) argued that people may draw on a variety of conceptions and that contextual understandings of creativity represent parts of wider streams of knowledge in the domain and explicit creativity theories. Depending on particular interests and situational circumstances we

draw upon certain knowledge. Hence, exploring conceptions in one context could tell us a great deal about social representations in the football domain. Moreover, this was important since no studies (in English at least) had qualitatively explored team ball sport practitioners' varied perspectives regarding creativity and its development.

Accordingly, the purpose "was to explore, analyse and contrast qualitatively different conceptions of creativity among football practitioners from a Danish club" (SS2, p. 3). As captured by the title of SS2, we explored the multifaceted role of creativity in football. For Moran (2010), a "role" is comprised by three interrelated aspects; 1) a *position* in a social network in relation to other positions, 2), a *function* that serves the community, and 3) a *purpose* (goals; values) that orients and drives behaviour. Hence, we mapped the coaches' ideas about *what* creativity means (i.e., different positions), *why* it is important (i.e., functions) and *how* it is developed (i.e., behaviours).

Based on pragmatism (*chapter 3*) we argued that conceptions are constantly remade since they inform and grow out of coaching practices. Also, since many conceptions may be operational simultaneously, it is important to consider which interests are served by the different perspectives and evaluate their practical consequences.

2.3.2. CASE STUDY

The study was designed as an instrumental case, targeting a rich, in-depth understanding of the role of creativity. An instrumental case "facilitates our understanding of something else" (Stake, 2005, p. 445), whereas the intrinsic peculiarities of the case are deprioritised and assigned a supportive role. Thus, the conception of creativity was the central unit of analysis (Yin, 2013) and the intrinsic elements of AaB were used to contextualise the data. Further, the use of a single-case design emphasised an exploration of the diversity of local meanings and illuminated context specific ambiguities about creativity. The single-case approach also allowed greater contextual sensitivity and evocation, which was envisioned to evoke resonance and naturalistic generalizations among readers (see *section 6.2.5.*)

Access to the talent development environment of Aalborg BK (AaB) was gained after presenting the study's scope and potentials for the sport director and talent director (TD), among others, who accepted the conditions (e.g., duration, spending a coach's time and influencing his practice, publication plan). The TD became a gatekeeper, who aided with practicalities (e.g., provided official BoK clothes, helping me blend in) and assisted with the contact information for relevant participants.

Since I was an outsider to the club (Krane & Baird, 2005), the empirical transaction of SS2 was not limited to the topic of creativity, but targeted in-depth understanding of AaB's culture, day-to-day practices and coaching strategies. Also, the employment of contextual knowledge expands the analysis from focusing on what coaches do (or think) to understanding why that is (Gilbert & Trudel, 2004). While my efforts in gaining contextual insights assisted in "making the strange seem familiar" (Holt & Sparkes, 2001, p. 243) it was crucial to maintain a critical or analytical distance to the field, since this allows identification and questioning of taken-for-granted practices, beliefs, or actions (Thorpe & Olive, 2016) and the delivery of new ideas. During my period in the club coaches welcomed me as a valuable and knowledgeable outsider,

due to my knowledge about creativity. The coaches were very interested in new ideas and to reflect on and develop their individual and shared practices. Hence, many considered the interview as a learning opportunity and enjoyed reflecting on questions they had not been asked before.

As mentioned in SS2, the case was chosen based on opportunistic and purposive criteria (Smith & Caddick, 2012). Opportunistic since my research group and AaB had initiated a more formal cooperation at the time I initiated my PhD studies. Purposive since AaB was nationally renowned for developing players many would consider as creative, and for playing a creative kind of football. Importantly, AaB had a considerable power over what was seen as 'good football practice' in the North Jutland Region (NJR). In this regard, AaB was one of the Danish clubs who had developed most of their own talents and promoted themselves as 'The Team of North Jutland' ('Hele Nordjyllands Hold'), since the club's professional team primarily comprised homegrown players who had previously played in cooperation clubs in the NJR. Talents were primarily recruited from this region (approx. 590.000 citizens), where AaB has more than 100 cooperation clubs. Inspirational training by elite AaB coaches at grassroots clubs, coaching days at AaB's training facilities, and a coaching network with engaged coaches and leaders from the region covered some of AaB's endeavours in qualifying coaches and progressing the level of football in the region. Further, six talent schools with 16 annual training sessions were held by AaB coaches for more than 500 locally nominated boys from U10 to U13. This regional knowledge sharing was believed to enhance the chance of recruiting players suiting AaB's talent system and game philosophy. Hence, the regional football coaches would probably derive part of their creativity conceptions through interaction with the AaB methodology. Also, if helping the AaB coaches to become more aware about consequences of different views this could potentially spread implicitly through the abovementioned initiatives.

The latter considerations were some of the reasons for choosing an elite environment although SS1 had emphasised that creativity is important for all players, at all levels of performance (also, see considerations in *section 2.2.9.*). As argued by Shilling (2005), social structures of elitist cultures may be more prone to limit creativity. Also, this choice was based on information-oriented criteria (Flyvbjerg, 2006). Basically, elite coaches use more time on football and may be able to reflect more on the notion of creativity in football.

Besides the motives listed in *section 1.10.*, a reason for choosing the context of football was that the perspectives on sporting creativity I aimed to challenge primarily regarded football and other competitive interaction sports (see *chapter 4*). Further, to illuminate the importance of creativity in the training of players in team ball sports, football was chosen as the specific micro-domain of interest since the prescriptive (Williams & Hodges, 2005; Partington & Cushion, 2013) and authoritarian discourses (Cushion & Jones, 2006), and the high amounts of specific instructions, augmented feedback and management during training activities (Ford, Yates, & Williams, 2010) that have repeatedly been found in this coaching context, indicate that that creativity could be limited by established practice. After completing my empirical work, this was supported by research. For example, in a study measuring athletes' everyday

creativity (see *section 5.4.6.*), Richard et al. (2017) showed that athletes from combat (e.g., fencing) and net (e.g., volleyball; badminton) sports scored higher on fluency, flexibility, and originality than those from invasion (e.g., football), racing (e.g., track & field; swimming) and artistic (e.g., gymnastics; figure skating) sports. However, they did not discuss the differences between sports.

2.3.3. PURPOSEFUL DESIGN

As elaborated later, semi-structured interviews (Brinkmann & Tanggaard, 2015) with 18 AaB members provided the primary data for interpreting creativity conceptions. After the interviews, additional data was produced by participant observations (Thorpe & Olive, 2016) of coach meetings, training sessions and matches of the U13, U15, U17 and U19 teams, including informal interviews (Krane & Baird, 2005) with coaches before, during, and after these events. This approach reverses much case study research in sport contexts where a stage involving participant observations precede interviews, as well as ethnographic studies where interviews are mostly employed to follow up information from observations and answering emerging research questions (Krane & Baird, 2005). A reason for not observing before interviewing was the subsequent action research process in SS3 (see *section 2.4.2.*) which relied on positive and trusting relation to the designated coach (Greenwood & Levin, 2007). Accordingly, considering AaB's value of credibility, it was deemed more important to employ a transparent and honest approach with open intentions and agendas than to minimize the effects of my presence on the results. Hence, the participant observation in SS2 were used to better understand why the coaches said what they said, rather than using interviews to understand why they do as they do.

The presence of a researcher may influence the coaches' choice of training activities and coaching behaviours, e.g. anticipating research needs or pleasing the researcher (Krane & Baird, 2005). Instead of minimizing this effect hiding intentions and blending in, I tried to embrace it, and turn it into a source of added insights. The topic of creativity was not mentioned when recruiting participants to the interviews in SS2 to avoid preliminary negotiations of meaning and consequently limit the amount of metaphors generated in the phenomenographic analysis. However, the purpose of exploring varied conceptions of creativity was revealed by the end of each interview in order to intensify the occurrence of meaningful events during the subsequent period with participant observations. Since I was careful not to disclose my understanding of creativity, any changes of behaviour or activities due to my presence (e.g., more focus on creativity) would still be based on their own conception. Further, this allowed me to purposefully conduct informal interviews (Krane & Baird, 2005), e.g., asking the coaches whether ongoing activities developed creativity. This topic made coaches very interested in my attendance, with several queries whether their training activities were appropriate in terms of nurturing creativity. In order to not influence their conception, I gave each coach some feedback after the last visit.

Further, to maximize the outcome of my field work, coaches were asked to design a new exercise they believed would foster creativity and conduct this in my last observation of the given team's training. This approach was possible since I was not interested in how the coaches' usual practices promoted creativity, but what they

would do if they explicitly designed for creativity (which was mostly an implicit part of their planning) and then using this to interpret the underlying creativity conception. Further, it enabled me to link my feedback to concrete experiences. After each coach had completed their new exercise, I e.g., asked what the exercise had to do with creativity to explore their rationales for the idea. Then we engaged in dialogue about how it could be improved.

In hindsight, this method, which I have not been able to find earlier examples of in the sport coaching literature, could have been exploited to a greater degree, since these events contributed with valuable data to construct the metaphors by elaborating the conceptions from the interviews. Among other interesting exercises, a rare example was that a coach who designed an exercise where he divided the team in four groups of five to six players and asked them to make a new dribbling sequence. After eight minutes the groups had to present the new idea for the other groups and then the coach and his assistants would nominate the best idea. The groups were free to create the sequence in the way they preferred. What happened in most groups was that one or two players took the lead. The others were passive and were mostly standing still, looking at one player trying the ideas. Some groups only talked about which techniques to combine rather than actively trying to combine the various ideas in action or come up with new moves. Justifying his idea, the coach mostly associated creativity with the new product, not the process. Still, this example contributed to the *INVENTION* metaphor (see *section 2.3.7.*). Subsequently, we discussed how the exercise could be modified so all players would engage actively in the idea generation (e.g., smaller groups and dividing the exercise in phases where the players first explore numerous ideas and then combine them in later stages).

2.3.4. INTERVIEWS

As described shortly in SS2, and elaborated below, semi-structured interviews were used to produce data for the phenomenographic analysis of qualitatively different conceptions of creativity. As a flexible method, a semi-structured approach allows spontaneous and curious questions, helps participants share "what is personally meaningful to them [and] reveal the sociocultural dynamics of human lives" (Smith & Sparkes, 2016, p. 108). Thus, interviews may reveal novel and surprising insights and advance the research field. Especially by putting the voices of individual coaches in dialogue with coaches from other interviews, as done in phenomenography.

Resonating with pragmatism, but borrowing from a discursive approach, interview data are produced in the situated interaction between the researcher and interviewee (Tanggaard, 2009). Therefore, interview dialogues do not unfold the interviewee's inner life story in uninfluenced ways, but their "socially and historically embedded modes of understanding and acting" (Tanggaard, 2009, p. 1513), or in other words, social representations (*section 2.3.1.*). This is supported by Smith and Sparkes (2016), who argue that interviews capture "shared cultural understandings and enactments of the social world, not pristine private experiences or inner cognitive meaning systems" (p. 108). Thus, interviews do not reflect prior experiences, but constitute experience.

Seeing the interview as a situated social practice, the interviewer becomes an active player in the meaning making process and should therefore consider the consequences

of questions – especially since the dialogue may bring out aspects that was not a part of the interviewee's world before the interview. Hence, talking about creativity in the interviews may have enhanced the coaches' focus on creativity in their practice.

According to Tanggaard (2009), the interview involves diverse discourses, personal narratives and dissenting opinions which are produced in the social interaction during the interview. Being aware of this allows researchers to "learn from the negotiation between different voices and discourses produced" (p. 1513). Hence, the exploration of coaches' embedded ways of acting and understanding and the possible conflicts between them was a key objective in SS2. As argued by Tanggaard (2009), a "major objective of qualitative research interviewing is to identify general discursive repertoires in speaking with particular social settings and to fuel public dialogue about research themes beyond the specific interview setting" (p. 1498).

Interview guide

Besides gaining insights in culturally available schemata of interpretation, a rationale for using interviews as the primary source of data production covered the opportunity to know other people through conversations (Brinkmann, 2013). Inspired by Henriksen's (2010) interview guide, the conversations initially dealt with AaB's talent strategy, culture, and coaching practices. As exemplified in *appendix B*, participants were inter alia asked to describe and exemplify cultural events and training activities. Next, the interviews pursued an in-depth understanding of participants' experiences, beliefs, motivations, values and perceptions regarding creativity, its value and development in football. Among others, these aspects were devised by research on teachers' conception of creativity (Alkuş & Olgan, 2014; Fleith, 2000; Newton & Beverton, 2012), findings and advices from research on creativity in sport, and own theoretical curiosities, e.g., whether they provided opportunities for experiments and play, used ideas from other sport disciplines, or involved the players when developing new solutions or tactics. As advocated by Brinkmann and Tanggaard (2015), the guide was tailored to each participant's background and role. Likewise, the questions were modified or substituted between interviews to saturate data (Brinkmann & Tanggaard, 2015). The guide in *appendix B* is a general one, which was adapted to each participant (a specific interview guide for each participant will be provided if requested).

The conversations were carried out at a quiet place in AaB's club house to ensure they felt safe and able to freely express their thoughts. During the interviews, I utilized my previous training and experience with the craft of interviewing (Kvale & Brinkmann, 2009), for example in not being fixed by the guide, engage in active listening, demanding many specific examples (of cultural events, training activities, creative solutions etc.) and adopting an open-ended interview style, which allowed the participants to direct the flow of the informal conversation, which jumped between the themes. Finally, the interviews served as an means of building rapport (C. Cook, Crust, Littlewood, Nesti, & Allen-Collinson, 2014; Krane & Baird, 2005), mutual liking and commitment. Building positive, trusting relationships to AaB's staff was important since this study encompassed a preliminary inquiry for the action research project in SS3. Thus, I used a conversational, sincere, humble, observant, and curious style and used a contextualized terminology (Krane & Baird, 2005; Smith & Caddick,

2013; Brinkmann & Tanggaard, 2015). The 18 interviews lasted on average of 97 minutes and resulted in approximately 248.000 transcribed words for the analysis.

2.3.5. PHENOMENOGRAPHY

Embracing the pragmatist notion of pluralism (*section 3.4.*), SS2 appreciated a variety of experiences, meanings, values, ideas and perspectives. This pluralistic element is reflected in the analysis, where phenomenography was used to explore, portray and interrogate the range of collective variations in understanding across all participants (Tight, 2016, p. 320). Analogous to pragmatism, phenomenography is tightly linked with practice and seeks to improve it. In this regard, phenomenographic studies have a *collective learning potential* (i.e., accumulatively building a broader knowledge base for both researcher, participants and communities) and a *critical potential* (i.e., highlight problematic aspects; emancipate the original research context from distorted practices), which may both contribute to "shape change in society" (Collier-Reed, Ingerman, & Berglund, 2009, 353). Marton (1986) defined phenomenography as a method for "mapping the qualitatively different ways in which people experience, conceptualize, perceive and understand various aspects of, and phenomena in, the world around them" (p. 31). Rather than characterising individual responses, this focuses on the *variation* between qualitatively different categories of description. This focus makes phenomenography stand out from phenomenology, where data is reduced to a common essence of experience (Tight, 2016). Contrarily, phenomenography describes the differential forms of experience, formed by relationships between the subject and diverse aspects of the outer world.

As described in SS2, we used an adapted version of Sjöstrom and Dahlgren's (2002) method for qualitative phenomenographic analysis to guide the identification and categorization of qualitatively different conceptions of creativity in football. While a first-order perspective discerned what the coaches talked about (e.g., creative players, actions, outcomes etc.), second order interpretation focused more on the qualitatively differences in "how" the coaches talked about the "what" (Sjöstrom & Dahlgren, 2002). Inspired by Attride-Stirling (2001) the descriptive categories (or *basic* themes) were listed in *organizing* themes, which were categorised in *global* themes. As stated in SS2, the phenomenographic analysis led to an outcome space with six global themes, 23 organising themes, and 122 categories of description. As shown in *appendix C,* the global themes include 1) qualities of creative players, 2) types of creative actions, 3) outcomes of creativity, 4) practical means associated with creativity, 5) past influences on creativity and 6) yields of creative coaches. More specific descriptions of basic themes will be provided upon request. In this regard, SS2 do not provide insight in coaches creativity in relation to team-tactical playing styles or invention of new techniques since the subsequent analysis of metaphors focused on the qualitatively different ways in which players can be creative. However, it should be noted that when talking about their own creativity, many coaches highlighted the continuous modification and innovation of their own practices as a means to survive the competitive environment. Yet, when referring to the players, the very same group of coaches primarily described player creativity by means of in-game performance markers.

2.3.6. METAPHORS

The idea to identify metaphors in the dataset was inspired by McKerracher (2016), who compellingly exemplified how metaphors can be used to grasp and contrast different conceptualizations about creativity by outlining how creativity is differentially portrayed, defined and represented by extant theories. Also, to the best of my knowledge, creativity-metaphors had not yet been explored in relation to everyday conceptions about creativity. This appeared to be a fortunate possibility because metaphors can be used to filter the complexity of definitions (McKerracher, 2016). Specifically, *conceptual metaphors* transfer metaphorical expressions from source domains (e.g., surgery) to target domains (i.e., creativity is surgicality) and can be used to invoke assumptions about concrete experiences, help us grasp abstract concepts by means of more concrete ones, facilitate understanding of complex and abstract ideas, and make recipients reflect (Lakoff & Johnson, 1980). Hence, we arrive at the "essence" of metaphors, which is "understanding and experiencing one kind of thing by means of another" (Lakoff & Johnson, 1980, p. 5).

While the phenomenographic analysis helped me immerse myself in the vast pool of data, the analysis of metaphors reduced the complexity of the results, made it easier to distinguish variation, and transformed the preliminary results into a format suitable for publication and presentation. The generation of metaphors was initiated with a transversal reading of the analytical segments (except those pertaining to coaches' creativity) to identify thematic attractors, that is, repeated patterns of meaning that runs across the general, organizing and basic themes, and to find metaphorical expressions that captured these paths of meaning. During this iterative synthesis, key meanings, variations and relationships in the dataset were clarified and modified and statements were explored to identify expressions of underlying foci and intentions (Åkerlind, 2005). Also, inspired by Attride-Stirling's (2001) thematic networks, the growing landscape of metaphorical expressions was graphically represented in a web-like manner as a contrastive tool in the interpretation of data. Presenting the results in a network would also "remove any notion of hierarchy, giving fluidity to the themes and emphasizing the interconnectivity throughout the network" (p. 389).

2.3.7. RESULTS

Below, the 15 metaphors are presented with illustrative quotes in order to exemplify how my interpretations were grounded in the data and thereby enhance transparency and credibility, among others, which are used as markers of rigor (see *section 6.2.*). See SS2 for more specific description of their meaning, benefit and application.

INVENTION – "Personal innovations that expand toolboxes" (SS2, p. 8)

> They develop a lot of these things on their own when they try their hand at it […] we only guide them on the way and engage them in some things to put in their toolbox, for instance where to run and what it means to run certain places. Suddenly they find out that you can run in one direction and then quickly change direction to lose opponents. They develop these things on their own. The coaches can't develop everything. (Brian)

MAGIC – "Moments of genius, where magical acts amaze bystanders" (SS2, p. 8)

> The summit of creativity is when a player occasionally does something you don't see coming, something extraordinary. You have a completely other overview standing

outside and it's actually much easier to see the game. What he should do and what he shouldn't do. Sometimes, we have some players who do some things where you have not seen it. Then you start to think 'okay this is bloody exciting'. (Lars)

TRANSGRESSION – "The transgression of norms and procedures" (SS2, p. 8)

If Bayern München meets Barcelona we can agree that the nuances are not that big. You can call what they will to do and how you will close it down. Thus, you depend on each players ability to think out of the box and do creative things. Break out of the system and do something. Our right back is insanely creative in his passes. Sees some possibilities that you don't see from the bench, something that is not arranged. (Henrik)

STYLE – "To display an unorthodox style" (SS2, p. 8)

I would look at how he solves some situation in a smart way, so it provides a goal, chance or something. That would be a creative player. For instance, if you stand as defender behind an attacker that is about to receive a jumping ball, and you stand a crooked angle on him, well then you can be creative and go to the other side and get a foot in. (Claus)

EXPLORATION – "Curious exploration of (un)known tools and situations" (p. 8)

The players put themselves in many situations where they have room to be creative, by saying "what if I make a vertical instep kick, what happens if I have my heel on the other side of my line, okay that didn't work, well then I try something else". They are creative by trying. […] I try to create a culture where it's about trying it and being creative. (Torben)

CO-CREATION – "Spontaneous co-creation of dynamic groups" (SS2, p. 8)

The idea is to create some dynamics, some synergies by combining some players with vision, since it can make things escalate. Thus, it can create some things when you put two clever players together. They sometimes make one plus one make three, and three together might make one plus one plus one make five. So that is exciting. (Lars)

INDEPENDENCE – "The liberty of making independent choices" (SS2, p. 8)

When a player makes a fantastic pass, that might not be the best one objectively seen, but it was anyway, because he saw that it was more appropriate for our game. […] If we do something and think he need to play it to the right, but then he makes a pass to the left because he thinks it is better. They have this opportunity to make their own decisions. […] If he thinks that it is the right solution to go on his own, or if another thinks it is better to play it. This is a high level of creativity. To see these things and be able to do it. (Henrik)

DECEPTION – "Disguised actions that deceive the enemy" (SS2, p. 8)

In the CL semi-final between Barca and Chelsea, Ronaldinho stands in front of the defence and makes a lot of different footwork and then – out of the blue – he kicks the ball with his toe. Neither goalkeeper nor defenders had time to react. It was very creative. (Torben)

DESIGN – "Solutions that design promising situations" (SS2, p. 8)

Creativity is that you can create chances. Create something when you have the ball and when you don't have it. That you can see possibilities in a pass or in applying pressure a certain place to open other spaces. Creative players can create things on their own and in connection with one or more others. You can see that they have many ideas. Some are not executed but something is happening all the time. (John)

SURVIVAL – "To endure solo survival situations" (SS2, p. 8)

Creativity is that you can get well out of trouble during the game without needing any help to do it. Creative players know what to do in the situations under pressure. How to

get out of this situation in the best possible way. They can do the right thing on the right time. No matter which position on the field, he can get out of eventual problems in a good way. No matter if it's a pass, a dribble, or a feint. (Bent)

CIRCUS – "Hard circus acts and artistic performances" (SS2, p. 8)

The creative player is one who can do a lot of tricks with the ball, one who can make feints, dribble, and stuff like that. Individual types who can do some tricks with the ball. (Viggo)

CHOREOGRAPHY – "Interaction choreographies rehearsed for matches" (p. 9)

It is something relational between players, who have this fantastic thing together. Yorke and Cole found one another in incredible ways. One jumped over the ball and he just knew where the other was. It's incredible to watch, that some players have this creativity together. I remember this as a player, where I knew exactly where to run when certain teammates were about to make a cross to the penalty area. I had a feeling for what they were about to do, but with others it was in east and west. (Henrik)

NAVIGATION – "Adaptive navigation among tools and situations" (SS2, p. 9)

The creative aspect is a central part of the game, where they need to make choices all the time, and every time they have made a choice, they need to make a new choice. Should they shoot, pass, or dribble? If dribbling, should they then turn with the sole, the inside, or the outside, and with which foot? They constantly need to make choices and play according to the situation, so they don't do the same thing each time. In 1v1, 2v1, and 3v3 situations, for example, there are several options to choose from. Stop-and-starts, body feints, turns, and so on. These duels invite the boys to rummage in the rucksack. (John)

PRODUCTIVITY – "Any act that produces something in the game" (SS2, p. 9)

Creativity has to do with creating something on the pitch, so it does not have to be anything peculiar. I have seen many defensive midfielders be incredibly creative without doing those things many would say is creative, but anyway, they create the most, because they just lie there and do the right things. Moves the ball to the right places. They always choose the pass that hurts the opponent the most. Always make the simplest pass, always do the right, most effective for the team. They never make difficult passes or winning passes, but just lie there with a great overview as a battlefield commander and controls the game, steering the team towards areas where the opponents can be hurt. (Jan)

SURGICALITY – "Surgical execution and exactness of tools" (SS2, p. 9)

Messi has become a fantastic passer. He passes with the right speed and angle each time, which makes him much more creative than Ronaldo. Some players have this touch on the ball, so it is always measured out. A player like Kasper Kusk has the same touch to execute it with the right angle and the right speed, which makes his passes razor-sharp. (Frank) *Why is that creative?* (Interviewer) Because it tears apart the defence. They can't restrain it. It's creative because it's not only measured out in relation to yourself but also teammates and to hurt the opponent the most. [...] This entire process, to make these complicated calculations and being able to perform it with such a touch, that is creative for me. (Frank)

2.3.8. COACHING INTERESTS

After analysing the qualitatively different ways in which creativity was experienced and understood by the AaB coaches (i.e., the varied meanings, benefits and applications of creativity are outlined in SS2), we discussed their practical

consequences and scrutinized which coaching interests they served. Sorting the metaphors based on their benefit, four abstract categories emerged. These signified that "working with particular kinds of creativity may (1) help players *solve problems* in the complex game, (2) facilitate the players' *learning and development* by sparking curiosity, (3) sustain their *engagement and participation* by stimulating gratification and/or (4) enhance the team's *chance to win* by sharpening certain player's ability to perform match-decisive actions" (SS2, p. 8). Broadly considered, these areas enhance the significance of developing creativity in competitive interaction sport.

Revising SS2, "offensive aesthetics" could be added as a coaching interest. As elaborated in the state-of-the-art review (*section 5.4.3.*), Lacerda and Mumford (2010), among others, highlight the aesthetic value of unique and original innovations of sporting geniuses which make them orthodoxies in their domain. Based on SS2, the aesthetic element also seems to play a role at lower levels. For example, the AaB coaches praised and applauded *MAGICALLY* astonishing solutions, exceptional *CIRCUS* tricks and compelling *DECEPTIONS*. Further, resonating with Adam's focus on aesthetical football in SS3, participants in SS2 pointed out that creative players are eye-catching and conspicuous, "exciting and nice to watch" (John) and "conjure up the extraordinary" (Frank). Like the other interests, the orientation to aesthetics signifies a bias towards offensive attributes. For example, AaB coaches preferred small, fast, technical players able to control the ball under pressure in tight spaces. Although other cultures value different aesthetic aspects, the popularity of match-oriented views may arise from, and contribute to, the objectification of players within coaching practice, where coaches don't see development as an end in itself, but use it as a means to supply players to other clubs (Cushion & Jones, 2012). Developing in-game creativity by prescribing football-specific skills such as hiding intensions (as done by some AaB coaches in SS2) may increase the chance of developing *DESIGNERS* and *DECEIVERS* that can make a difference for the club's professional team, attract public attention to the club, and later be sold to the highest bidder.

The practical consequences of the four orientations were discussed in SS2. One of the central issues was that metaphors oriented towards winning matches and solving in-game problems were applied by means of activities that did not involve much creativity (e.g., of the kind defined in SS1), but primarily coach-centred activities focusing on effectivity and appropriate actions rather than novelty and uncertain experiments, and e.g., aimed to "arm players with a predetermined collection of football-specific skills" (SS2, p. 11). Even when asked to come up with their best ideas for how to promote creativity, many coaches proposed specific practice forms that did not require the players to be creative.

On the contrary, the learning and engagement-oriented metaphors involved more player-centred activities, e.g., with exploration of unfamiliar situations and encouragements to attempt difficult things. Further, while the learning- and engagement-oriented metaphors concerned all players in all kinds of game situations during training and matches, those oriented towards winning emphasized the offensive part of competitive matches, where opponents could be surprised with efficient, well-timed decisions. Although the interview guide covered questions which allowed the coaches to talk about the significance of being creative in training (e.g.,

what does mean for a players' development the be creative?), several did not do so, or merely transferred their match-specific notions to training (e.g., designing or deceive in small sided games).

As argued in SS2, coaches' conceptions may delimit who are allowed to be creative. For example, those associating creativity with an offensive mindset believed that creative players cannot conform to defensive structures and agreements. Therefore, it was inappropriate to choose 11 creatives for starting line-ups, because their risk-taking, playfulness and unworriedness make the game "explode" (Jan). Opposed to "players with structure, who keep track of our tactics" (Kaj) and plays safe, creative players do not think about things that can go wrong. Hence, several participants did not welcome *DECEPTION*, *TRANSGRESSION,* and *CIRCUS* in the defence, since they could "dribble in an inconvenient area and loose the ball" (Jan). However, as a whole, the 15 metaphors do establish a new vocabulary of creativity in football, which may facilitate more nuanced dialogues and applications. Indeed, the results expose that it is not just number 10 who should be considered as creative, but that all tactical positions can be creative in different ways. Yet, although several metaphors from SS2 cover all positions, creativity was mainly associated with the offensive parts of the game, attacking actions happening on the last third of the pitch and techno-tactical solutions performed in possession of the ball.

Also, several modalities of knowledge were used to explain the creativity of local pioneers and role-models. One prominent midfielder was variously recognized as a *NAVIGATOR* (Claus; Brian), *SURVIVOR* (Lars; Claus), *DESIGNER* (Jan; Kaj; John; Mogens)*, CO-CREATOR* (Viggo) and *DEVEIVER* (Peter; Lars; Torben). Most agreed that he was creative, but few agreed why. Depending on their particular interests and the circumstances in the situation, the coaches draw upon particular knowledge forms. For example, nuancing the match- and solution-oriented metaphors, the coaches who focused on advancing their players' interrelationships often accentuated *relational* kinds of creativity (i.e., *CO-CREATION; DESIGN*), while those focusing on technical skills attended to *individual* kinds (e.g., *DECEPTION; SURVIVAL; CIRCUS*).

2.3.9. CONTRIBUTION

Besides offering rare qualitative insights in coaches' conception of creativity, SS2 showed that "coaches' conceptions delimit if, why and how creativity is conceived and promoted, where and when creativity is endorsed and who are believed and allowed to be creative." (p. 14). Hence, the results demonstrate how coaches understanding of creativity guide their interpretations of player abilities and actions, which kinds of solutions are regarded as creative, "which players are believed and allowed to be creative, and how they chose to promote creativity" (p. 6). Thus, it was argued that researchers "should recognise the multifaceted and contextual nature of creativity, which entails many ways to interpret, engage with and transform the world" (p. 13) and consider which purposes are served.

In this regard, the amount of different conceptions of creativity illuminates that it may be difficult to work with creativity in practice, because there is little agreement about its nature. Contradictory conceptions, for example, make it hard to evaluate creative efforts and inconsistent practices may confuse players. Nevertheless, SS2 show that

the different ways to understand, value and apply creativity may supplement each other.

Further, SS2 exposed how coaches' conceptions of creativity are interrelated with cultural features (e.g., cultural practice forms) and personal capacities and desires (e.g., coaching interests). In this regard, the findings of SS2 suggests that the learning- and -engagement oriented metaphors may be deprived by enhanced focus on results, appropriate decisions and team-tactical concepts during the developmental pathway designed by the club. The findings also suggest "that paying attention to creativity conceptions may reveal whether stakeholders are oriented towards long-term potentials or acute achievements" (p. 12). Enhancing the relevance of SS3 (see *section 2.4.*), several coaches were unaware about the learning- and engagement-oriented potentials of nurturing creativity, and most coaches were ignorant of the possibility to enhance creative capacities that could benefit players in a many different situations in football and their everyday lives as talents. For future research, it was suggested that researchers study sport participants perspectives on how creativity have helped them "survive and thrive in elite sport settings" (p. 13).

On the one hand, SS2 demonstrate that there may be "more room for creativity in elite football than alluded elsewhere" (p. 13), e.g. *section 1.5.* and critical studies on high-performance sport. On the other hand, the findings suggest that "traditional, prescriptive practice forms may have a pervasive impact on how coaches conceive of [and promote] creativity in their sport" (p. 13). Consequently, "this may constrain how players think they ought to be experiencing playing football, cutting off their possibility to experience their sport in explorative, inventive, stylish or transgressive ways" (p. 13). This issue may have limited the range of ideas that was operationalized in SS3 (see *section 2.4.*).

The results show the advantage of holding different conceptions of creativity and using these in dynamic ways. The main idea of SS2 was to explore the dimensions of meaning, or to use a metaphor, the landscape of conceptual variations regarding creativity in AaB. As described in SS2, we aimed "to provide a contextual account of the multifaceted roles played by creativity in football" (p. 4). Hence, the idea was not to arrive at a singular or exclusive conception of creativity in football, but to celebrate the "multiple ways to interpret, experience and engage with the world" (p. 3), while carefully monitoring their practical consequences. As McKerracher (2016) argue "each metaphor reveals something important about creativity" (p. 424). Hence, their varied attributes and implications could be explored in much greater depth. The metaphors pave the way for further inquiries in specific kinds of creativity that may spawn new of refine extant conceptual frameworks.

Also, "this study opens new vistas to understand and nurture creativities" (p. 13). From a pragmatist view (*section 3.5.*), the metaphors may stimulate new and broader interests, beliefs and possibilities in the context of competitive interaction sports, e.g., leading coaches to shape their training environments in novel, meaningful ways. This may be facilitated by the use of metaphors, which works as "a tool for comparison and understanding [and] helps shift through the complexity of conceptual differences" (McKerracher, 2016, p. 417). The multifaceted metaphors for creativity may generate

novel ways to appreciate the range of potentials implicit in creativity in sport. Finally, the metaphors may help coaches reflect on the limitations and possibilities of their own ideas about creativity. Outlining the range of creativity metaphors operating in a given context "may help stakeholders realise if their situation requires inquiry, and in turn, expand the perspectives, objectives and experiences of practitioners" (SS2, p. 4).

2.4. ENABLERS AND OBSTACLES FOR CREATIVITY

Below, SS3 (Rasmussen et al., in review) is summarised, with its methodology elaborated, and new aspects of its results discussed.

2.4.1. BACKGROUND

Due to the popularity and in-game significance of creativity in team ball sports, several creativity-nurturing coaching frameworks have been developed. However, no studies have explored how coaches perceive or apply these approaches, and there is a lack of research on the personal, social and cultural conditions that may facilitate or block their implementation in sporting practices. As argued in SS2, "what happens when preparing, conducting and evaluating the advised creativity-nurturing activities is left to anyone's imagination, except the coaches, who were not asked" (p. 2). If we are to effectively and authentically inspire and support the promotion of creativity, we must understand the interests pursued and challenges faced by individual coaches who work with creativity-nurturing approaches. Hence, the purpose of SS3 was to "explore enablers and obstacles of designing and applying creativity exercises to facilitate elite youth players' exploration of novel action potentials during organised training" (p. 5). Hence, SS3 explored the usefulness of the ideas developed in SS1.

2.4.2. ACTION RESEARCH

The exploration of enablers and obstacles was based on an action research (AR) process where I collaborated with Adam, a Danish U17 elite football coach from the club Aalborg BK (AaB). In the AR process, which comprised cycles of design meetings and practice experiments, we used a range of creativity-theoretical concepts as tools to play with to design new exercises that could facilitate creative actions, as defined by SS1. Instead of studying the practices of a coach who already worked with creativity based on academic frameworks, an AR approach was chosen to magnify the information content of the case.

Further, the AR approach allowed us to focus on an individual coach's reality, how he operates within and interprets his environment and the process by which meanings and knowledge are used to guide his actions. These aspects are keys to understand underlying features of coaches' beliefs and behaviours (Harvey, Cushion, & Massa-Gonzalez, 2010; Potrac, Jones, & Armour, 2002). As a well-known expression coined by Kurt Lewin, the father of action research, reminds us, "the best way to understand something is to try to change it" (cited by Greenwood & Levin, 2007, p. 18). Hence, AR could be a viable way to meet Cushion and Partington's (2016) appeal for more research that questions existing coaching ideology and valuates the underpinning assumptions rather than reproducing extant discourses. Cushion and Partington (2016) argue that extant research often downplays the influence of social structure on

coaches' dispositions and overemphasise coaches' reflexivity and agency. Exposing coaches to alternative practice forms may challenge their beliefs about learning, established practices and entrenched cultures (Harvey et al., 2010) and thus be an indicator of the underlying assumptions that inform practice and impact how creative activities are perceived.

Described with Reason and Bradbury (2001) ways of knowing in AR, my *propositional knowing* (i.e., abstract concepts) was used to question taken for granted beliefs, formulate alternate perspectives and facilitate *practical knowing* (i.e., how to design for creativity), but Adam's *experiential knowing* (e.g., tacit knowledge; lived experiences) could entail defensive inquiries protecting against discovery of the new and different. Also, Adam's *presentational knowing* (e.g., stories and images of creative players) could make him stick to old stories and thereby recreate extant beliefs and practices. Although repeatedly meeting resistance, I continually sought, following Reason (2006), different ways to challenge assumptions and engaged in re-description (i.e., express Adam's stories of creativity in new ways and from other perspectives) to deepen the experiential basis of understanding.

When initiating the AR process, I had played football at a recreational level for 24 years, but besides my degrees in Sport Sciences, I had no coaching education. This external perspective is important in AR since local traditions, assumptions and routines may lead practitioners to overlook important resources for change (Greenwood & Levin, 2007). Still, my familiarity to sports in general and creativity in particular, put me in an insider-outsider-insider position (i.e., insider to sports, outsider to the particular club, insider to creativity) with each of these positions bringing benefits and disadvantages. What I was trying to do was to capitalise on the advantages of knowing the domain and getting to understand (from a certain distance) the actual social field I was entering.

As Thorpe and Olive (2016) argue, the key here is that "whether observing fields from the inside, outside or somewhere in between, each position must be considered in terms of its specific possibilities, challenges and limitations" (p. 130). Since lacking authenticity and not sharing experiential base may be limitations for outsiders, it was important be open-minded, honest and curious, respecting Adam's football knowledge. Considering the plastic and pluralist worldview of pragmatism (*section 3.1.*), there are multiple, socially embedded but changeable realities. This was a resource for the AR (i.e., visit each other's perspectives to be inspired), but could also lead to disagreement, e.g., due to denials of otherness, lacking openness to learn and unwillingness to risk prejudgments (Bernstein, 1989). Rather than confronting the other as an opponent and exposing their absurdities and weaknesses, pragmatism calls for dialogical responses in cases of conflict, that is "seeking common ground in which we can understand our differences" (p. 16) and thereby clarify disagreements – not necessarily reach consensus.

More specifically, my position was defined as a "friendly outsider". To paraphrase Greenwood and Levin (2007) the friendly outsider is not a boss or a director, but a coach. Hence, a guiding idea was to treat Adam as a talent with unexploited potentials in nurturing creativity, by inviting him to co-generate new action possibilities and

enabling him to take charge of the meaning making process. In this regard, vital process skill was to demonstrate integrity (while avoiding to go native) in terms of an authentic interest in the success of the local football community, as well as a "willingness to celebrate the capacities and action of local people and an active appreciation of the possibility for change that exist locally" (Greenwood & Levin, 2007, p. 126).

Moreover, a possibility of being an outsider was to avoid the "assumption of shared distinctiveness", leading participants to not fully explain their experience (Dwyer & Buckle, 2009, p. 58). In the present process, it was not difficult to separate our personal experiences, and both of us understood that we were coming from different places. However, we faced what Greenwood and Levin (2007) defined as "the co-generative challenge" (p. 107), that is, to take advantage of our differences, find the common third possible space where interests overlap and lead to meaningful ideas for both parties: "Both sides have a complex web of intentions and interpretations of the structures and processes they are engaged in" (p. 107). Still, we were able to gain understanding of each other's' perspectives through our interactions. As an outsider, I gained insights in the conceptions, pedagogics, culture and politics in the field, while Adam, as an insider, were helped to question some of his taken-for-granted beliefs.

2.4.3. RESULTS

As implied by thematic analysis, these analytical outputs (elaborated in SS3) are "creative and interpretive stories about the data, produced at the intersection of the researcher's theoretical assumptions, their analytic resources and skill, and the data themselves" (Braun & Clarke, 2019, p. 6). The following potentials were encountered (SS3, p. 13):

1. *Ownership*: Provide sovereignty, so players can make propositions and solutions
2. *Curiosity*: Inspire the players to "search for and attempt new things" (p. 14) on their own
3. *De-robotization*: Prevent that elite structures entail inflexible, stereotypical playing styles
4. *Trademarks*: Enhance players' chance to find unique ways to use their abilities in the game
5. *Playful atmosphere*: Stimulate relaxed attitudes towards making mistakes and inefficiency
6. *Rare (inter)actions*: facilitate wow-moments and extraordinary solutions during training

To enhance the chance to encounter such emancipative potentials I presented a myriad of ideas as "anticipations of possible solutions […] of some continuity or connection of an activity and a consequence which has not as yet shown itself" (Dewey, 1916, p. 160). Yet, many of the imagined ways to facilitate creative actions were discarded by Adam, so they could not be acted upon during practice experiments. Consequently, these proposals did not "guide and organize further observations, recollections and experiments" (p. 160). Instead, the process was overturned by Adam, when he advanced the notion of appearing creativity as the most viable way to integrate creativity in football practice. This led to reproducing extant practical perspectives, focusing on effective surprises in matches rather than unusual experiments during training. Basically, this consisted of coach-led generation of tactical principles to guide the teams' planned improvisation. This kind of creativity surprises the opponent, but is based on agreements and can be rehearsed. The following obstacles limited the process of generating and using creativity exercises (SS3, p. 13):

1. ***The football-specific curriculum***: Many other agendas reduced available tome
2. ***The tournament***: Match-analysis and -preparation more important than trying new things
3. ***Result- and performance pressure***: Obliged to conduct efficient and meaningful training
4. ***Beliefs about efficient coaching***: No room for learning goals based on creative abilities
5. ***Demands for transferable actions***: Evade inappropriate solutions and unrealistic situations
6. ***Reluctance towards unconventional artefacts***: Cannot include tools from other sports
7. ***Conventions about age-related training***: Technical peculiarities are for younger players
8. ***Views of players' perception of good training***: Competiveness and focus on good decisions
9. ***Players' reception of alternative exercises***: Fixed mindsets reject the alternative activities
10. ***Requirements for integration***: Cannot change or deviate from established practices
11. ***Demands to maintain competitive elements***: Preference for games with opposition
12. ***Football-specific views about creativity***: Maximize surplus to help players appear creative
13. ***Sedimented beliefs about creative players***: Cannot change creative abilities substantially

Further, and adding to SS2, which expose the dynamic interrelatedness between beliefs and practices, SS3 elucidates how the interaction between personal interests (e.g., playing aesthetic football) and capacities (e.g., tactical football knowhow), temporal conditions (e.g., bad results; offseason) and cultural features (e.g., what is regarded as good football) determine the applicability of creativity exercises. Hence, SS3 indicates that result orientation and "cultural conventions about quality coaching" (SS3, p. 30) may limit coaches' possibilities to adopt new ideas. Instead of investing in the unpredictable strategy of nurturing creativity, "cultural and political aspects led the coach to focus on winning from using more predictable strategies" (SS3, p. 30).

2.4.4. CONTRIBUTION

The potentials and obstacles may be used to reflect on one's own views about creativity, its meaning and development in team ball sports. Moreover, the study outlines a range of questions planning to adopt creativity-enhancing coaches can reflect on and ask their peers. Also, the AR entailed six principles for designing creativity exercise (SS3, p. 26):

1. ***As many variants as possible***: Solve a repeated, technical task with quantity.
2. ***Improvised game scenarios***: Rotational games with recurrent game scenarios.
3. ***Planning and breaking out***: Small groups plan new ways to surprise opponents.
4. ***Instant coach-, self- or peer-created problems***: Stimulate spontaneous solutions.
5. ***Unhabitualisation***: Collective or individualized blocks of habitual (inter)actions.
6. ***Secret missions***: Creation of game situations where rare solutions may be used.

Hence, SS3 provides a detailed portrait of creativity-nurturing activities which involve the perspective of the coach, and the interests pursued and challenges he faced when collaborating with me to design and apply new activities. These insights in an elite youth coach's perception and application of creativity exercises not only illuminate why it is hard to work with creativity in practice, but also why it may be vital to do so. Hence, awareness about the potentials and obstacles, albeit context, person and time dependent, may be vital to enhance the achievements of future interventions studies and other endeavours to implement creativity-nurturing activities.

For researchers' and practitioners' future endeavours to facilitate creative actions, it was inter alia suggested that "more time, effort and frequent application of creativity

exercises may be vital to reinforce coaches' understanding of the underpinnings and emancipative potentials of creativity" (SS3, p. 25) and thereby widen the boundary for what is seen as efficient coaching. To support these processes, researchers should develop more practical concepts and principles (i.e., concrete ways to facilitate creativity) to be implemented in coach education courses on creativity. The impact of such programs might be enhanced with more research-based arguments for why creativity exercises and creative abilities are beneficial for performance. Such arguments should emphasize the players' perspectives on the importance of being creative. Also, for future work, such arguments could be vital to make it more meaningful for players to engage in the atypical activities required when working with creativity. Starting to apply creative activities at younger ages might help players become more open to alternative approaches at later stages. Involving the wider coaching community is vital to minimize the number of peers that oppose new ideas.

Based on SS3, one could raise the question of what would have happened if working with coaches from younger age groups (or performance levels), who were not so bound up by results and tactical principles, and e.g., focused on the learning- and engagement-oriented metaphors from SS2. As exposed by SS3, Adam often argued that my ideas were more appropriate for the younger age groups in AaB's elite system, e.g., since these already focused on "me-and-the-ball" activities and doing a wealth of peculiar skills (involving match-irrelevant ones) to enhance technical and coordinative capacities (see SS2).

2.4.5. AGE-DEPENDENT RESULTS

As described in SS1, the U17 level was chosen since AaB's talent director requested that the participating coach had a full-time position in AaB. As mentioned above, the results of SS3 indicate that more ideas might have been pursued and more potentials discovered if working with a coach from a younger age group. Yet, based on SS2, and as exposed by the potentials from above, working with U17 was highly relevant.

In SS2, many AaB coaches mentioned the transition from U15 to U17 as a critical event. The developmental pathway towards the professional team was paved with increasing amounts of tactical rules and principles and increasing focus on team-specific game concepts, tactical awareness, position-specific training and match preparation – all this to mimic the demands the Danish Premier League (DPL). Also, intra-team competition, result-orientation, and surveillance became increasingly noticeable as players progressed in the system. The stakes were getting higher and the demands for the individual player to act in certain (effective) ways in certain situations were growing. In SS2, several AaB coaches argued that this was especially evident in the transition from U15 to U17. This transition also involved a growing complexity in training activities and enlarged emphasis on the game-related functionality of solutions. In this regard, AaB coaches expressed that some players were 'strangled' and 'paralyzed' by these elite structures (SS2, p. 13), e.g., becoming more afraid of making mistakes and being process-oriented in matches, which were emphasised in the younger age groups. This issue was discussed in the beginning of the AR process and lead to the potential of de-robotization (*section 2.4.3.*), which might not have emerged at other age levels.

A final reason why the AR project was relevant at U17 was to challenge match- and performance-oriented conceptions. SS2 indicated that the growing emphasis on results and "acting in certain ways in certain situations" (SS2, p. 13) along AaB's talent pathway made coaches at the U17, U19 and DPL level more prone to prefer efficient, in-game kinds of creativity and disregard several ways in which creativity could be grasped, valued and applied in pre- and post-game contexts, especially in deliberate practice. Therefore, it was important to enhance Adam's awareness about the developmental benefits of creativity (e.g., the learning- and engagement-oriented metaphors from SS2).

CHAPTER 3. THEORY OF KNOWLEDGE

The purpose of this chapter is to clarify the axiological, ontological, epistemological and methodological embeddedness and implications of pragmatism, as adopted in the three sub-studies. My use of pragmatism is primarily inspired by John Dewey's perspectives, and supplemented by contemporary scholars who utilize the path-breaking ideas of the original pragmatist thinkers such as C. S. Peirce and William James. During my PhD studies, I got the opportunity to write an entry on pragmatism for *The Encyclopaedia of Creativity* (Rasmussen & Glaveanu, forthcoming), which qualified the present chapter.

The choice of pragmatism initially rooted in an aspiration to work *with* – and especially *for* – coaches, which require a philosophy for grasping and developing social practice. For me, pragmatism, and especially Dewey's account, was appealing since he made a great effort to bridge his philosophical ideas with everyday problems and experience. Further, pragmatism was a suitable position, since it could not only guide my research interests and assumptions about the world, but also tell me great deal about the nature of creativity. Fittingly, pragmatism can be considered as an action- and future oriented philosophy, that deals with improving practical affairs in communities and societies and with emancipating people from limiting traditions so we can thrive in our everyday lives (Biesta & Burbules, 2003; Rumens & Kelemen, 2013). Accordingly, pragmatists intend to challenge dogmatic assumptions and shape future purposes, actions and experiences (Cornish & Gillespie, 2009; Joas, 1996).

3.1. A PLASTIC WORLD

From Dewey's position, experience is the basis of knowing. The world is understood as an *emergent* and *practical* world, which we can only come in touch with and aware of through our actions and the obstacles we encounter, when the flow of our activities is interrupted (Brinkmann, 2008). In his own words, meaning arises in the "intimate union of activity and undergoing its consequences" (Dewey, 1916, p. 140).

Seeing human activity as the centre of reality, pragmatists invert the classical hierarchy of knowledge, where reality is the reference of knowledge and human experience is flawed (Cornish & Gillespie, 2009). On the contrary, pragmatists consider it as speculative and vague to talk of a reality behind human experience. In this way, Dewey also challenged the "quest for certainty" of the traditional positivist views he called reductive materialism, which assume that the world is stable and predictable since all things are reducible to discrete constituent parts (Stoller, 2018, p. 49). Distinguishing this foundationalist and realist view from his own position, naturalistic materialism, Dewey argued that everything is related and emerge from the *transaction* between man and environment, which means that the world is socially, culturally and historically constructed. Moreover, this notion stresses that we do not just interact with, but are in a co-dependent relationship with on our environment. Man and environment are mutually constituting parts. This means that we are not just passively moulded by the environment, but it is a two-way process. This also means that pragmatism favours ecological, contextualized research.

As evident in SS1, SS2 and SS3, a core premise of Dewey's position is that all human activities, qualities (e.g., creative capacities), events (e.g., creative processes) and problems should be understood and studied by means of the transaction between the organism and its physical and social environment. Our subjective reality, our character and dispositions, are continuously created their dynamic interplay with the environmental features of the present moment (Biesta & Burbles, 2003; Elkjaer & Simpson, 2011). All persons bring unique sets of histories, capacities and interests to the situation and therefore experience the world in different ways. Our past, present and future exchanges with the outer world (e.g., authorities, peers, institutions, communities, society, culture) shapes our situational identity, perception and doings, which concurrently shape our outer world (Rasmussen & Glăveanu, forthcoming). From a Deweyan position, existence is a situated, temporal and changing. Nothing "exists as a thing-in-itself, but all things are manifestations of particular kinds of novel and complex relationships" (Stoller, 2018, p. 50). The world is not there before we experience it, but is brought to life by the transaction. In this regard, Dewey (1925) reasoned that the world consists of an immense variety of possibilities:

> "an impressive and irresistible mixture of sufficiencies, tight completeness, order, recurrences which make possible prediction and control, and singularities, ambiguities, uncertain possibilities, processes going on to consequences yet indeterminate." (cited from Vo & Kelemen, 2014, p. 237)

Stating here that the social world is instable, unpredictable and prospective, Dewey highlights that our life goes on in a radically contingent world of risk where our existence is ineradicably marked by chance. Hence, we "live in an 'open universe' which is always at once threatening and a source of tragedy and opportunity" (Bernstein, 1989, p. 10). Operating in the possible allows novel and unexpected properties to emerge, and if not discouraged by dogmatic, dualistic practices, Dewey believed that agentic creation of our own experiences through experiments with the environment could improve our "ability to achieve some level of control over the contingencies of life" (Evans, 2000, p. 313). This forms a profound link to creativity and the nurturing of creative capacities which help us respond to uncertainty.

A common interest for the original pragmatists regards an escaping of the Cartesian splits between our inner and outer world, person and environment, individual and social, mind and body, facts and values, knowing and doing, freedom and determinism, theory and practice etc. Instead, these facets constitute each other and should be seen as a dynamic, interwoven whole. Consequently, pragmatism abandons the idea that our mind can get fully in touch with a real world outside itself. As Cornish and Gillespie (2009) state, the existence of "mundane here-and-now practical action – is undeniable" (p. 803). Thus, it is possible to gain access to the objective condition, that is what is done (or said), the way in which it is done, who and what it is done with (e.g., materials), but it is not possible to know why it is done, the internal condition (Vo & Kelemen, 2014). Having to interpret this, it will always be our subjective perception of other's reality – not the reality itself. Thus, I do not attempt to represent a reality outside myself, but use my own reality as a resource in the sub-studies.

The elimination of dichotomies is highly relevant for creativity research, which, among others (see *section 5.5.2.*), is marked by divorces between personal and social

forms of creative expression (Glaveanu, 2012). While some considers creativity as solely dependent on cognitive factors, others emphasize the role of the social context. The pragmatist's solution for overcoming such limiting splits was to focus on action. This insight is integrated in my PhD studies (cf. SS1). Furthermore, Dewey (1916) used the notion of *continuity* to replace the dualist separations and argue that these are constitutive elements of the transactional world.

3.2. TRUTH AND KNOWLEDGE

Pragmatic truth is subjective, changeable, situated and temporary. This notion of truth exceeds the traditional *correspondence* (i.e., that theory reflects the reality) and *coherence* (i.e., that truth is a coherent interpretation of the world) views, by locating truth in "its prediction of future experience" (Rumens & Kelemen, 2013, p. 9). Thus, truth is intertwined with action, experience, time and place – and any claims about objective observations and representations are fiction for pragmatists, who refute all notions of transcendental, absolute or universal truths (Joas, 1996). For William James, truth is not built into an idea, but first happens to it when its practical application guides us towards new experiences it will be worthwhile to have been guided to (Brinkmann & Tanggaard, 2010). Therefore, some concepts and propositions are "truer" than others, depending on how well they serve as guides for action (Rumens & Kelemen, 2013).

Knowledge do not have a meaning on its own. Truth cannot be settled a priori, since the value or usefulness of an idea is not realised until testing it in a concrete situation to find out how well it serves in resolving the indeterminate situation. Due to the continuity of knowledge and action, we can only accept ideas, principles or concepts as knowledge when they are used purposefully to solve problems of action.

> "Only that which has been organized into our disposition so as to enable us to adapt the environment to our needs and to adapt our aims and desires to the situation in which we live is really knowledge" (Dewey, 1916, p. 344).

Knowledge is *used* to grasp and affect the world, to make sense of what is happening in the present moment and to guide what could be done in the next. Hence, it is the *act* of applying dispositions to "straightening out a perplexity, by perceiving the connection between ourselves and the world in which we live" (p. 344). Again, the criterium for judging knowledge is not whether it reflects the underlying reality, but whether it serves desired human interests (Rorty, 1999) by producing "physical changes in things, which agree with and confirm the conception entertained" (Dewey, 1916, p. 338). In this regard, and since knowledge constitute our problems and possibilities, a fundamental task for pragmatists is to produce tools that bear the potential to guide action. Based on the above, the sub-studies are not knowledge in themselves, but may become knowledge when used by sport practitioners or researchers. With Dewey's *experimentalism*, theories should be treated as tools to think, play and create with, in order to generate prospective action possibilities and learn, that is, acquire "more varied and complex predispositions to act" (Elkjaer & Simpson, 2011, p. 71). Hence, the outcome of pragmatist research should be evaluated regarding its effectivity in inspiring, stimulating and guiding the future practical affairs of individuals, groups and communities. As Dewey (1916) argues,

> "we live not in a settled and finished world, but in one which is going on, and where our main task is prospective, and where retrospect (…) is of value in the solidity, security, and fertility it affords our dealings with the future" (p. 151).

Accordingly, the core task of my PhD thesis is to expand and enrich sport coaches' (and thereby the players') dispositions, objectives, actions and experiences, which, in turn, stresses the focus on contextualised research. As Brinkmann and Tanggaard (2010) put it, science is a practical entity, an "extension of our hands that make possible a fruitful manipulation of things and events" (p. 247). In the following section I outline how the theoretical tools from my PhD studies were both developed and tested in the experimental process of inquiry.

3.3. INQUIRY

Dewey introduced the theory of inquiry as an attempt to dissolve "the epistemology industry" which he believed comprised narrow and less capable projects (Stoller, 2018, p. 56). Thus, spanning from the scientific process (i.e., the perspective taken below) to everyday problem solving of reflective organisms, the process of inquiry basically regards all human cognition (not an isolated mental process). Moreover, Dewey was influenced by Charles Darwin in that inquiry is the principal way in which we – as animals – seek to achieve contextual continuity and control by adapting the environment and developing tools (e.g. words or concepts) to not only help us survive but also enable us to thrive.

The process of inquiry involves the interlinked stages of 1) sensing a need for change, 2) conceiving the problem, 3) observing the conditions, 4) crafting provisional solutions, 5) anticipating their practical consequences and 6) testing their functionality in terms of how efficiently they resolve the situation (Dewey, 1938).

Hence, inquiry is defined as the

> "controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole" (Dewey, 1938, p. 108).

All inquiries originate from an indeterminate situation that does not make sense since it is "disturbed, troubled, ambiguous, confused, full of conflicting tendencies, obscure" (p. 109) and marked by "a unique doubtfulness" (p. 109). Experienced as unknowingness, such disruptions cannot be explained or resolved by means of habits or routines. This problematic situation drives the search for knowledge that can offer a way out. To initiate the experimental process, this situation should be diagnosed, explored and clarified by the researcher(s). Among more, my PhD studies were initially aroused by a discrepancy between a high demand for creative players among coaches (and the multifaceted benefits of creativity), but indications that organised training in sport hampers creativity (see *section 1.5.*). Later, different prejudices and rigidities were identified in SS2, ensuring that the issue with conceptions of creativity was not just another textbook problem, spelled out the uniqueness of the situation, allowed contextually sensitive discussions, and confirmed the relevance of generating new ideas for cultivating creativity in SS3.

Discovering that a situation needs to be transformed is the first step. Next, defining the problem is the most decisive step of transforming the indeterminate situation it guides the process of inquiry. As Dewey (1938) enlightens us,

> "The way in which the problem is conceived decides what specific suggestions are entertained and which are dismissed; what data are selected and which rejected; it is the criterion for relevancy and irrelevancy of hypotheses and conceptual structures." (p. 112)

Accordingly, guided by the research question, methodological possibilities (e.g., phenomenography in SS2), theoretical directions (e.g., cultural psychology in SS1), hypothetical ideas and possible solutions are anticipated in thought experiments (cf. abduction in *section 3.6.,*) as "consequences (forecasts) of what will happen when certain operations are executed" (p. 113). Next, their functional capacity be explored in cycles of acting and reflecting (e.g., use writing as a method of inquiry, discovery and analysis; Richardson & St. Pierre, 2005), which entail further ideas and experiments, until a relevant way to resolve the disturbed, indeterminate condition is found (Dewey, 1938). Thus, pragmatism allows the researcher to employ an argumentative eclecticism (i.e., referring to the research question).

In SS1, the research question was *how can creativity support player development in sport?* Hence, the experimental process e.g., led to identifying and exploring a variety of ways to define and relate creativity and development, ingredients of creative actions and arguments for their benefits for players. Theories and concepts were employed as means to ground the ideas, so the examination of a variety of intermediate meanings leads to a final meaning, characterized by internal consistency (i.e. construct validity), which is one of Dewey's (1938) requirements for the reliability and credibility. Also, the final meaning of SS1 give rise to particular kinds of activities that can supply evidential material for the functional capacity of the ideas, which are tested in a specific community of inquiry, where novel (but anticipated) observations during operation may validate that the ideas carry the reasoned qualities (Dewey, 1938).

Active modification of existing conditions is the only way to re-establish transactional balance. The indeterminate situation can only be settled by modifying the constituents, that was initially disturbed (e.g., the way creativity was usually grasped and operationalized by coaches, as disclosed by SS2, which did not facilitate creative actions during training, but aimed for creative match performances).

> "Reasoning … can provide means for effecting the change of conditions but by itself cannot effect it. Only execution of existential operations directed by an idea in which ratiocination terminates can bring about the re-ordering of environing conditions required to produce a settled and unified situation." (Dewey, 1938, p. 121)

However, due to the transactional premise, all solutions are temporal and existential. We cannot predict what will happen when doing something. As the social situation change (e.g., personal capacities; environmental features), so do the properties of truth. In this regard, Dewey (1938) understood truth as a *warranted assertibility* (or operational hypothesis), which imply that the outcomes of any inquiry are carried on as abstract inputs in future inquiries, where they can be imaginatively or actively or put to use as potential "means of attaining knowledge of something else" (p. 122).

The tools from SS1 were operationalised in the AR in SS3 (which could be seen as inquiry), where a U17 football coach participated in recurrent inquiry cycles aiming to design creativity exercises. Here, several ideas were generated and explored to find the most promising ones to test. However, the application of creativity rarely resulted in pragmatic truth for the coach. Imagining the practical consequences of various ideas (e.g., based on experiences from earlier inquiries), he did often not perceive the future experiences as worthwhile in relation to his interests. Thus, several ideas were not tested in practice. Consequently, some potentials may have been neglected due to lacking time, dispositions (and openmindedness) to test diverging ideas.

3.4. PLURALISM

Reflecting the transactional premise and the idea that we operate experimentally in a social and changeable world, pragmatism is marked by *pluralism*, meaning that pragmatists applaud and promote a multiplicity of "values, experiences, meanings, perspectives, and methodologies" (Rumens & Kelemen, 2013, p. 12). In William James' view, "the world is a pluralism" (cited by Evans, 2017, p. 285), implying that the world is comprised by endless possibilities. There are many different ways to engage, express, describe, interpret and transform the world. Besides this ontological kind, pragmatism offers a "pluralism of knowledge", which recognize the validity of diverse individual and collective interests, perspectives and knowledge forms (Cornish & Gillespie, 2009). Further, pragmatism fosters a "pluralism of experience", which enables us to employ our past experiences and our present perceptions to anticipate and cope with future experiences. For example, William James argued that experience continually envelops physical and cultural objects, their relation and uses, and thereby enable us to meaningfully shape the environment in new and different ways (Rumens & Kelemen, 2013). Hence, being open to a plurality of perspectives (and methods) is not only important for creativity researchers, but also for the creative process itself. In this regard, a common ambition of pragmatists is to cultivate communities of creative inquirers who can entertain a variety of perspectives and reflect critically on consequences of varied views (Bernstein, 1989).

This pluralistic situation entails that there are numerous ways to conceptualize, perceive and utilize the world and its parts. For Bernstein (1989), the important thing is how we respond to pluralism. To avoid fragmentation, he encourages pragmatist researchers to employ "an engaged fallibilistic pluralism" (p. 15), which is to accept one's shortcomings, be open to otherness, risk prejudgments and avoid fixity of doing and thinking. Thus, when examining rival positions or assumptions, one should aim to seek common ground, understand the differences, and grasp other positions in the strongest light possible. This was e.g., a guiding principle during the state-of-the-art review (*chapter 4* and *chapter 5*), and the AR in SS3. As Bernstein (1989) argued, "understanding does not entail agreement. On the contrary, it is the way to clarify our disagreements" (p. 17).

The pluralistic element is evident in SS2 where a conceptual landscape of creativity was developed with relations between the metaphors. This may, in a pragmatist manner, entail more nuanced dialogues about creativity in sport, and, in turn, expand experiences. Also, to avoid 'one-size-fits-all'-solutions, all ideas are delivered as

potentials or possibilities, not predictions of future actions and experiences. To avoid delivering essentialist or fundamentalist views, the theoretical and methodological choices, operationalisations, outcomes, and implications of this sub-studies are presented and discussed in an open-ended transparent and way, that encourages critique and elaboration. For instance, the outcomes of each sub-studies are explicated as changeable and temporal features that are inseparable from the empirical context and my own experiences. Further, in SS1, and throughout this PhD thesis, different horizons for the developmental implications of creativity are introduced. In Peirce's view such pluralistic initiatives strengthen the reliability (i.e. the 'cable'): we should trust a multitude and variety of arguments rather any conclusive singularity (Bernstein, 1989). Further, each sub-study differentially entails what Dewey (1938) sees as the product of scientific inquiry, namely a "new language, a new system of symbols related together on a new basis" (p. 118), which is important, since "no fact in isolation has evidential potency" (p. 117).

As argued by Cornish and Gillespie (2009), pragmatism is *pluralist* since it accepts a range of competing interests and perspectives, but also *critical* since it questions which interests and whose interests are addressed by certain actions – or are undermined or disregarded in the situation (Cornish & Gillespie, 2009). As outlined next, such queries are based on a democratic ethics to avoid adherence to authorities, dogmas and instincts.

3.5. PROJECTING FUTURE POSSIBILITIES

Besides research that guide people towards fruitful purposes, actions and experiences by projecting possible futures, pragmatists also value research that disclose and challenge social and cultural structures, routines, traditions, presumptions and discrepancies that may limit people from thriving in their everyday life (Cornish & Gillespie, 2009; Joas, 1996; Rumens & Kelemen, 2013). These emancipative ambitions of pragmatism focus on human experience which should preferably be freed from fixed habits, discrimination, externally enforced labour, repetition, and practices based on authoritarian, oppressive, dogmatic and controlling conventions. For Dewey (1916, p. 230), the function of science is "emancipation from local and temporary incidents of experience, and the opening of intellectual vistas unobscured by the accidents of personal habit and predilection". This emancipatory element is central for SS1, where performative approaches to sporting creativity were challenged, for SS2, where cultural practice forms and interests entailed rigid and prejudiced ideas about creativity and its value and development in sport, and for SS3, which generated a range of obstacles for the application of creativity in elite football practice. These advances are intended to nourish and nuance everyday (and scholastic) dialogues about creativity – not to shred existing approaches.

Considering the plastic worldview, since pragmatism reject any idea about absolute truth, and the reference of knowledge is the future, endeavours in interpreting past realities only makes sense if using these insights to project future actions to create fruitful differences to experience (Brinkmann & Tanggaard, 2010). Rather than accurate representations of *past* realities, pragmatists value research that expand or enrich *future* purposes, actions and possibilities of practitioners by offering new

perspectives, creating new and alternative ways to think and act in particular contexts (Rorty, 1999; Joas, 1996). These aspects may contribute to social reform, that is, improvement of existential and environing conditions so people are enabled to take control of their life, and live their everyday life in more gratifying and fertile ways (Rumens & Kelemen, 2013; Evans, 2000).

As argued by Cornish and Gillespie (2009), pragmatists offer ideas for 'what might be' – not 'what is' – and critically question *which interests* and *whose interests* we are serving. In terms of "whose", and inspired by Cornish and Gillespie (2009), my PhD studies offer knowledge for 1) *taking care of oneself*, 2) *intervention design* and 3) *cultural critique*. First, the methods and theories chosen serve the practical needs and interests of coaches and sport participants, to create actionable knowledge, stimulate reflection, sensemaking and dialogue about creativity, rather than exercising power (e.g., measuring which approach has the best effect). While distilling coaches' experiences and perspectives in SS2 to offer metaphors as resources to guide future actions, I aimed, especially in SS3, to make "the action turn" (Reason, 2006, p. 188). This revise the purpose of social science to not only to describe, interpret, or deconstruct our world, or to contribute with new knowledge and emancipatory theory, but to form direct links between theoretical concepts and moment-to-moment action so inquiry contributes more directly to the flourishing of people, communities and societies. Second, the various concepts from SS1, the practical experiences, varying orientations and consequences encapsulated by the SS2 metaphors, and the obstacles, dilemmas, potentials and successes encountered in SS3, may guide the design of future creativity interventions. Moreover, the richly detailed case descriptions in SS2 and SS3 may entail more context-sensitive decisions. Third, the sub-studies intend to stimulate new cultural interests, by imagining alternative futures (e.g., potentials, SS3) and creating novel points for reflecting on the present practice (i.e., metaphors). Further, in SS2, we were not only concerned with valuating the coaching interests addressed, but also pondered those that were overlooked or ignored.

This leaves the question of "which interests" or ends are served. In this regard, a central point of a Deweyan approach is not only to discover unique possibilities, but also whether these alternatives are *desirable* (Biesta & Burbules, 2003). For Dewey (1916), what counts as desirable regards 1) intrinsic values and 2) valuations. First, *intrinsic value* is characterised by genuine appreciation or satisfaction, an "immediate significance of experience" (p. 249), that is, actions worth-while for their own sake. Comparing present conditions and an imagined future, *valuations* include judgment of "which of the various possibilities of a situation is to be preferred" regarding "ends beyond themselves" (p. 249). Hence, in SS1 it was argued that creativity (i.e., exploration of novel action possibilities) not only bears an intrinsic value, but also entail several ends beyond itself (e.g., active habits; growth). Hence, this possibility was favoured over in-game conceptions. Also, the four abstract categories of metaphors formed and discussed in SS2 is essentially a valuation of the purpose of working with creativity in football.

The above imply that academic ideas should have a moral character and improve human conditions, purposes and activities in a broader sense – not only incite fresh moments in our experience (Brinkmann & Tanggaard, 2010). More specifically,

pragmatists argue that academic ideas should entail qualities conductive for democratic ideals such as liberty, diversity, tolerance (Cornish & Gillespie, 2009) and values such as growth, freedom, engagement, enjoyment, problem-solving, character and equality (Brinkmann & Tanggaard, 2010).

As mentioned earlier, pragmatism aim to cultivate communities of creative inquirers who can entertain a variety of perspectives and reflect critically on the interests addressed by different views and their consequences (Bernstein, 1989; Evans, 2000).

> "The pragmatist theory of intelligence means that the function of the mind is to project new and more complex ends – to free experience from routine and from caprice. Not to use of thought to accomplish purposes already given in the mechanism of the body or in fact of the existent state of society, but the use of intelligence to liberate and liberalize action, is the pragmatic lesson."
> (Dewey, 1917, p. 63, as cited in Joas, 1996)

Hence, pragmatists cultivate activities that develop capacities and attitudes which may help us handle and shape our environment, enjoy more pleasure, make the world more meaningful and generate new possibilities, such as critical thinking, playful imagination, initiative and openness. These qualities stimulate *growth* (see *section 2.2.6.*), the constant reordering of experience, where we expand our perspectives and construct new purposes and new ways to engage with the environment (Dewey, 1916). As pointed out by Joas (1996), John Dewey's primary theme was "growth, self-enhancement, creativity" (p. 138). In Dewey's (1916) own words there are no (educational) ends beyond growth: "life is development" and "developing, growing, is life" (p. 50). Also, development is arrested by prejudices, stubbornness, and aversion to change, which block new stimuli (Dewey, 1916).

According to Stoller (2018), Dewey's claim of "educating in the present" (p. 61) is rarely acted upon and often misread: What Dewey means it that we should not prepare for the future by deploying and acquiring solutions from the past, but by creatively engaging in the present experience through inquiry, whereby we construct ourselves and create meaning. Thus, as argued in SS1, coaches should not use direct instructions, but establish a training environment where generative capacities are put to use in intrinsically joyful activities. If not encouraging "diversity of operation in dealing with questions" the player's vision is restricted to the single path the coach's mind permits (Dewey, 1916, p. 175).

3.6. CREATIVITY

The process of inquiry (see *section 3.3.*), encapsulates the pragmatist perspective on creativity. With clear traces to Dewey, an elegant account is delivered by Joas (1996):

> "all perception of the world and all action in the world is anchored in an unreflected belief in self-evident given facts and successful habits. However, this belief, and the routines of action based upon it, are repeatedly shattered; what has previously been a habitual, apparently automatic procedure of action is interrupted. This is the phase of real doubt. [...]" (p. 128)

Hence, our habits decide that we perceive situations in a certain way and act in certain ways. Joas continues that creativity arises in situations where habits are insufficient,

when our repertoire of action possibilities can't help us, where we end up in problems if we do as usually, and we therefore need to perceive the world in a new way or act in a new way. Hence, we construct the meaning of ourselves through creative acts.

> "the only way out of this phase is a reconstruction of the interrupted context. Our perception must come to terms with new or different aspects of reality; action must be applied to different points of the world, or must restructure itself. This reconstruction is a creative achievement on the part of the actor. […] something new enters the world: a new mode of acting, which can gradually take root." (Joas, 1996, p. 129)

Again, doubt, and therefore creativity, arises when our usual ways of acting are disrupted by surprises or unusual events. Hence, it is the concrete situational challenge that require and stimulate creative solutions, not the long-term pursuit of enhanced performance. Further, this perspective stresses that creativity is something we do (i.e., a process that changes something), rather than something we have (i.e., a psychological trait). Hence, "creativity is part of life in itself and not something reserved for unique individuals" (Tanggaard, 2014, p. 109). This reflects the idea of treating creativity as a means rather than an end (SS1). Hence, from a pragmatist perspective, it makes more sense to *facilitate* or *stimulate* creativity than to *develop* creativity. Also, this perspective implies that if the players can rely on their habits in training and performance contexts, then they will not develop.

Accordingly, some of the basic assumptions of my PhD studies was that creativity regards forming special kinds of open-ended problems (or tasks) that enforce creative solutions (e.g., can be solved in different ways), that the solutions are constructed by the actor(s), and that creative solutions are new for the actor, not necessarily others. This situated and action-oriented perspective on creativity was adopted in SS1, where creativity regards doing things that one does not usually do in a given situation. Further, a basic idea of the design meetings during the AR in SS3 was to shatter or interrupt routine actions and to confront the players with new situations (uniquely unsettled and doubtful), where the player's unreflected beliefs about football are challenged and where they are required to reconstruct themselves and the situation, by perceiving the situation in another way, from another perspective. Similarly, for Dewey's (1916), a "habit means an ability to use natural conditions as means to ends" (p. 46). Habits actively control the environment through action, and are certain ways to relate to the world. However, creative action is needed when a habit cannot be used to understand, control or handle the environment.

As highlighted in SS1, pragmatism imply that creativity involves relating to the doubtful situation (that demand novel responses) in a curious and openminded way (Tanggaard, 2014). This is further clarified with Peirce's notion of *abduction*, which highlights the inventive and spontaneous search for possible solutions during inquiry (see *section 3.3.*). Opposed to the retrospective and constrained reasoning processes of deduction (i.e., derive conclusions on particular observations based on a generalized set of premises) and induction (i.e., derive generalizations from particular observations), which are also key parts of the inquiry process, abductive processes can both forestall alternative futures and explain preconditions to past events. In retrospect, abduction regards an imaginative search for possible explanations for the preconditions that led to certain events observed in the world and thereby form links

between empirical and logical aspects (Rumens & Kelemen, 2013). In prospect, which is most relevant for creativity, abduction has been described as "an ampliative and conjectural mode of inquiry through which we engender and entertain hunches, explanatory propositions, ideas, and theoretical elements" (Locke et al., p. 907). In other words, it adds to what we already known without proof or sufficient evidence (which can be established at later stages). Hence, pragmatists are encouraged to employ indeterminate truth values to stimulate the research process, e.g., by asking "what if" questions to generate "maybe's" (Elkjaer & Simpson, 2011).

During my PhD studies, I engaged in abductive reasoning when conceptualising SS1, when spawning creativity metaphors in SS2 and when designing for creativity and envisioning potentials of doing so during the AR process in SS3. Among more, I also used abduction to conceive intriguing or surprising data segments or findings during the analyses of SS2 and SS3, while moving iteratively back and forth between data and the emerging themes. The speculative, inventive and intuitive search for new purposes, solutions and existential consequences unwinds the historical bonds on our actions and opens novel possibilities and alternative ways to engage with the physical and social environment.

> "Abduction is not mere chance, random variation, or free association […] In abduction the scientist frees himself from the yoke of former perceptions and received interpretations and creates a free relationship to both […] an active form of release in which sight is never completely lost of the problem at hand that is calling for explanation" (Joas, 1996, p. 135).

Abduction reside in impulsive and spontaneous actions of the subjective "I", which bring probing, novel and varied actions into experience, in response to the habitual behaviours and embodied social norms and conventions of the objective "me". G. H. Mead argued that the intrapersonal transaction between these symbolically mediated processes continuously re-construct our social self. While the "me" is a reflexive attitude towards oneself, the decentred "I" expands one's horizon of possibility, creates new ways to engage with the social situation, and give us a more flexible relation towards the world and oneself (Elkjaer & Simpson, 2011; Glăveanu, 2015).

3.7. CRITICS AND PITFALLS

According to (Jenkins, 2017), who argue that pragmatism is worthy of more attention in sport coaching research and practice (e.g., call for more abductive reasoning in sport coaching), it is common, especially in research and practice on sports coaching, to employ a *crude* pragmatism, only interested in "what works", rather than *philosophical* pragmatism. In this regard, it may be argued that excessive focus on what works could limit creativity.

Further, many philosophers are troubled by the neo-pragmatists' (e.g., Rorty's) complete rejection of any form of correspondence truth (Johnson & Onwuegbuzie, 2004). As evident in *section 3.2.*, the classical pragmatists' anti-foundationalist, instrumental and provisional account of truth could be said to correlate with our actions on various degrees (e.g., how well a tool guides us to the estimated consequence). Ultimately knowledge is constructed in action and depends on the

transaction in the given situation. For some scholars, this ignores the common meaning of truth and allows a kind of make-believe where everything goes. However, it is a narrow, misleading conception that pragmatism is just utilitarian, and that its pluralism result in moral or epistemological relativism. Pluralism does not mean that all concepts or actions are equally beneficial to solve a given problem or serve a given purpose – some ways to engage with the world are clearly better than others. Although recognizing diverse, competing perspectives (and methods), pragmatists would explore and conceive which actions a given definition gives rise to and carefully evaluate potential consequences of particular approaches.

As argued by Cornish and Gillespie (2009), pragmatism is *pluralist* since it accepts a range of competing interests and perspectives, *action-oriented* since it grounds our knowledge in everyday human activity, and *non-relativist* since it evaluates theoretical tools by their ability to refine our relation to the world, guiding actions that entail useful consequences in relation to our interests. However, pragmatism is *critical* since it questions which interests and whose interests are addressed by certain actions – or are undermined or disregarded in the situation: "Making moral choices among these interests is a social and political activity, which should include critical assessment of the interests served" (Cornish & Gillespie, 2009, p. 807). Still, with its emphasis on action, some argue that pragmatists tend to endorse incremental change, rather than structural or revolutionary societal changes (Johnson & Onwuegbuzie, 2004). The democratic ideals and values outlined in *section 3.5.* provide the criteria for judging knowledge and choosing the interests to pursue in inquiry. However, critical colleagues might question whether researchers should judge what is right, useful or desirable in a moral, democratic and humanistic sense. As argued by Biesta (2007), scientific knowledge is needed to make decisions about priorities and resource allocation. In this regard, it is most efficient to follow Dewey in that democratic communities should "enhance the life for all, rather than life of the few" (Evans, 2000, p. 319). Also, I explicitly addressed what is meant by usefulness, creating better futures and stimulating growth to avoid the critique that these aspects are often vague and fuzzy (Johnson & Onwuegbuzie, 2004).

In an unpredictable world, one might ask, how can we know what something leads to? And how can we know what will be useful ahead of time? From a pragmatist perspective, human action is fundamentally oriented towards the future, but we can never know exactly what the future holds for us. Our action builds on the past, concerns the present moment, and is projected into the future. It is this latter part of action, our anticipation of future experiences (which e.g., involve hope and imagination), that gives meaning to actions in the present. These processes expand our experiences from the actual to the possible and transform the present – while anticipating the future we change the present. Hence, we can evaluate the desirability and usefulness of our actions by means of the present consequences of our future anticipations. The orientation to the future stems from the original pragmatist maxim which suggested that the meanings individuals ascribe to actions and events in the present can be entirely understood in terms of the anticipated future consequences arising from these actions and events (Elkjaer & Simpson, 2011). This may be difficult

to grasp for followers of philosophies that only account for meanings in retrospective interpretations of past experiences.

A challenge of working with pragmatism is its openness toward many kinds of methods (e.g., qualitative and quantitative) and concepts (e.g., even conflicting perspectives) as long as it suits the research question. These choices place large demands on transparency, evidence, documentation, reflection and argumentation – otherwise the problem and my position would be lost in the many possibilities. These challenges are not lessened by the fact that the outcomes of the three sub-studies are changeable and temporal features, inseparable from the empirical context and the continuity of my experience and interests. Hence, from a realist perspective, this would make the studies less true.

Finally, since pragmatism is not a "unified body of ideas" (Rumens & Kelemen, 2013, p. 3) it may be difficult to grasp. For Bernstein (1989) it's most convenient to appreciate its "vitality and diversity" by handling the tradition "as an ongoing engaged conversation" (p. 6), where the pragmatist thinkers have challenged and elaborated each other's ideas.

CHAPTER 4. PREDOMINANT PERSPECTIVES

In this chapter I interpret three predominant perspectives on sporting creativity. First the *Tactical Creativity Approach* and the *Non-Linear Dynamical Systems Perspective*, which are based on cognitive and ecological psychology, respectively. Then the *Creativity Developmental Framework*, which integrates aspects of the former two. Comparing and juxtaposing these to the perspective taken in this PhD thesis, illustrate the uniqueness and significance of the theoretical, methodological and empirical contributions of the present work.

4.1. EXTRAORDINARY TACTICAL DECISIONS

The Tactical Creativity Approach was founded (and still maintained) by professor Daniel Memmert, who is the most productive scholar of sporting creativity. Memmert and Roth (2007) coined *tactical creativity* (TC) as "those varying, rare, and flexible decisions that play an important role in all team ball sports" (p. 1423). From this perspective, tactically creative players have a critical role in matches since their unpredictable and uncommon solutions in various kinds of game situations increase the chance of overwhelming the opponent(s) and leads to success, that is, winning. Thus, TC regards versatile and even extraordinary solutions (Memmert, 2015). In recurring examples, TC scholars highlight exceptional players like Lionel Messi, Wayne Gretzky and Michael Jordan, who are prised for their highly unusual and original ways to complete passes (feints are only TC if opening a pass). Arguably, these famous players are constantly ready to act on new sensory impressions.

TC also implies that "creativity can only occur during offensive game situations and not in defensive situations" (Memmert et al., 2010, p. 4). This is based on an understanding of team ball sports where attackers initiate the actions and the defenders' responses are constrained, since good defensive play consists of adequate, convergent actions. In an endnote, Memmert et al. (2010) noted that this statement was part of a questionnaire, which was distributed at a team ball sport congress. With the possibility to either agree or disagree to the statement, all responding researchers (n = 6) and coaches (n = 17) agreed. This is challenged by the ideas offered in SS1, where all players have the possibility to discover, generate or utilize action potentials they do not usually do in a given situation.

4.1.1. MEASUREMENT

The TC concept was inspired by J. P. Guilford's seminal distinction between divergent and convergent thinking. Parallel to tactical intelligence, game sense or expert decision making, *convergent thinking* regards an ability to choose the ideal tactical solution in specific game situation. Hence, convergent styles are structured, have a clear objective, favours a "best" solution approach and reaching for the optimal result. Resonating with my view, TC scholars argue that some forms of practice may limit creativity due to excessive focus on developing convergent thinking (Memmert et al., 2010; Greco et al., 2011).

Contrarily, divergent thinking, or TC, is the production of surprising, flexible and original solutions in different tactical game situations (Memmert & Roth, 2007).

Fittingly, the three main components of TC, fluency, flexibility and originality are operationalised for quantitative testing. *Fluency* is defined and measured as the number of adequate solutions, *flexibility* differentiates the ease with which the player changes between different levels of thought, uses alternative reference systems, creates alternate hypothesis, and modifies information, and *originality* signifies "the unusualness, innovativeness, statistical rareness, or even uniqueness" of the player's solutions to a game-related tactical task, situation or problem (p. 1424).

Most often, these variables are rated by experts in the given sport while watching a video of the players' performances in *game test situations* (GTS). In the "identification of gaps" task (i.e., a 4v3 game that require spatial orientation), the players are evaluated for their ability to find and use free space when passing the ball. (Memmert & Roth, 2007). All solutions are given 1 to 10 points, but the final score is not an average of all solutions. When flexible *and* original GTS performance is globally estimated by judges (i.e., experts in the given sport), a maximum score of 10 points should be appointed players who demonstrate (two or more) "different, highly unusual solutions" and found optimal passes/positions that were highly unusual and "absolutely unique" (p. 1432). In the other end, a score of one should be appointed to players who only offered standard solutions and whose optimal passes/positions were never new or innovative. Similar procedures are used in laboratory experiments with video tasks (i.e., clips of attacking teams), where the players are asked to imagine themselves as the player with the ball and then have a minute to note and as many possible solutions as they can think of for each scene, e.g., where and how to pass (Furley, Memmert, & Heller, 2010). Here, the expert judges rate originality "from 1 (*totally obvious*) to 5 (*not at all obvious*)" (p. 1329), and flexibility is evaluated by making judges divide all players' solutions into a number of larger categories and then give 1 point for each category that was selected. Hence, all ideas are included in the laboratory studies, while unsuccessful actions attempted during GTS are disregarded.

Statistically rare solutions and high TC scores are not necessarily the result of exploiting, perceiving or generating unusual affordances, which is understood as creativity in SS1. Hence, this PhD thesis offers an alternate interpretation of the notion of *unusualness*. Instead of gauging the rareness of a particular tactical solution in relation to the sample (or standard actions in the sport) the act should be compared to the given player's usual actions in similar situation. Further, by collapsing changes in the amount, variety and rarity of solutions to a total score, the GTS methodology disguise the individual player's development and particularly unique solutions, that could provide insights into the personal and environmental conditions that facilitate creative actions. With the meaning-oriented principle of cultural psychology (*section 6.1.*), evaluation of creativity cannot be solely conducted by external experts, but should emphasise the actor's perspective and those affected by the action. The actions judged as original may neither be experienced so by the players nor their peers or coaches, and actions trivial to the judge may be highly unusual for the player. Further, the principle of ecology (*section 6.1.*) questions the presumption that scores in video-based TC tasks can determine the player's "creative decision making in real game situations" (Hütterman et al., 2019, p. 6). As Fardilha and Allen (2019) argue, the use

of GTS has "improved ecological validity, albeit in quasi-naturalistic settings (researcher-controlled, non-competitive)" (p. 18).

Due to the numerical and collapsed scores, it is unclear whether participants performed more, other kinds, more complex or even more original ideas in the post tests (e.g., in intervention studies, see below). Further, when comparing players from different levels of expertise (e.g., Memmert 2011; Hüttermann et al., 2019), those with high TC scores could merely rely on an advanced repertoire of habitual solutions and being the only ones able to execute the most difficult solutions (due to refined technical or attentional skills). This could make them more likely to surprise opponents and complete risky passes, but does not necessarily mean that they are able to discover, perceive or invent new solutions. Reversely, players who often exploit, generate or discover unusual possibilities (and e.g., attempt personally original solutions), will not necessarily be judged as tactically creative. They may be extremely good at changing between different levels of thought, use diverse systems of reference, generate fresh hypothesis, and modify received information, but if all their alternative solutions fail, they are not rated as tactically creative, since the GTS procedure require successful acts. Above, the latter qualities (which are also regarded as generative capacities in SS1) were described as part of the flexibility variable. Hence, it is questioned whether these qualities are captured by GTS and video-based TC tests, where flexibility is "the diversity of tactical solutions over different game situations" (Memmert & Roth, 2007, p. 1424). As argued by Fardilha and Allen (2019), a there is need for better "alignment between definitions of creativity and research methods" (p. 18). Finally, the above procedures imply that high scores entail a larger chance of performing creatively in matches. However, this is challenged by the idea of SS1 that situated, dynamic player-environment transactions determine whether creative actions are explored.

4.1.2. INTERVENTION STUDIES

Much research within the TC perspective have been done to increase the individual player's ability to seek and find original solutions during game-play that extend "beyond coached and practiced aspects" (Memmert, 2015, p. 95). In other words, TC studies focus on increasing the individual player's *creative potential*. As suggested in SS1, TC scholars treats creativity as an end (e.g., optimise practice for creative match performances), whereas a core objective of my PhD studies (especially SS1 and SS3) was to treat creativity as a means, e.g., implement creative activities to enhance players' growth and enjoyment (*section 2.2.*).

Some TC studies have shown the effectiveness of interventions based on deliberate play and diversified activities, creating training with low amount of structure and high levels of freedom to explore a broad range of divergent (and convergent) actions when solving challenges during training (Greco, Memmert, & Morales, 2010; Memmert, 2006, 2007, 2010; Memmert & Perl, 2009; Memmert & Roth, 2007). Generally, these studies tested the impact on team ball players' creative potential by measuring divergent performances in sport-specific (GTS) or domain-general tasks before, during and after implementation of various sport enrichment programs, designed for particular groups (mostly children). These quantitative, pre-post designs masked the

subjective or objective original solutions that might have been discovered, generated or exploited during the intervention periods – even for players that did not improve their TC score – and whether this qualitatively improved the experiences of the player, or the coaches' who conducted the activities.

4.1.3. COGNITIVE MECHANISMS

Reflecting *MAGIC* from SS2 (*section 2.3.7*), a basic assumption of the TC perspective is that creative players can perceive and perform things other players do not see or do when staging teammates in fruitful game situations. Uncreative players do not choose unusual solutions because they are perceptually unaware of the possibility, not because they are mentally (e.g., lacking courage) or technically (e.g., lacking ball control) unable to do so. Accordingly, several TC studies focus on identifying or improving a range of cognitive-perceptual mechanisms that influence the players' capacity to perceive as much situational as possible, recognise patterns, or notice unexpected possibilities. As argued by Fardilha & Allen (2019), this privilege "creative thinking about sport over creative action" (p. 20). Hence, much research in the TC perspective focus on players' inner environments, and neglects its transaction with the outer environments, as emphasised in SS1.

In this regard, several controlled, laboratory experiments have tested causal relationships between cognitive-perceptual factors and sport-specific (video-based) and/or domain-general creativity tests. Most studies have examined the role of attentional processes, such as breadth of attention, visual search strategies and inattentional blindness (Furley et al., 2010; Hüttermann, Memmert, & Nerb, 2019; Memmert, 2006, 2011; Memmert & Furley, 2007; Roca, Ford, & Memmert, 2018). For example, the most creative players are able to distribute their spatial attention towards areas on the pitch that reflect specific demands of their sport, e.g., the horizontal area in football and a wider vertical area in basketball (Hütterman et al., 2019)**.** Therefore, and since they use a higher number of short-duration fixations, they are able to detect relevant cues much earlier (Roca et al., 2018).

4.1.4. PRIMING EXPERIMENTS

Another line of controlled, laboratory-based studies tests the effect of priming on football players' performance on video and/or image-based TC tasks. These studies show that prior exposure to social primes may improve – or reduce – TC during sub-sequent task performance. For example, Furley and Memmert (2018) showed that exposing amateur footballers to images and names of expert players attributed as creative (i.e., Messi; Thiago Alcántara) enhanced TC and exposing them to uncreative experts (John Terry; Per Mertesacker) decreased TC. Similar effects were found when making them describe the on-court behaviour and skills of the experts. With Higgins' regulatory focus theory, both Memmert et al. (2013) and Hüttermann et al. (2018) demonstrated that footballers with induced situational *promotion* focus (i.e., accomplishment; aspiration) outperform players with a *prevention* focus (i.e., avoidance, responsibility) on a TC task. The players were initially primed by "cheese" or "owl" conditions in a pen-and-paper maze task or instruction cards (i.e., "find as many solutions as possible" or "avoid bad solutions"), which elicited explorative and

risky motivational states on the one hand, or perseverant and risk-averse motivational states on the other. From the perspective of SS1, these priming effects support the idea that dynamic player-environment transactions determine creative actions, and specifically show how our intentionally can be changed by means of the way the task is presented (*section 2.2.7.*).

4.1.5. DEVELOPING TACTICAL CREATIVITY

Based on most of the above studies and additionally supported by theories about implicit learning, knowledge about tactical transfer in team sports and research on the importance of movement variability (among more), Memmert (2015) presented the 6Ds model for fostering tactical creativity. The main applications of the model are summarised below.

- *Deliberate-Play*. In early stages, design unstructured and sport-unspecific games and apply diverse kinds of balls. Recruit lately specialised talents with diversified experiences.
- *1-Dimension-Games.* Design games with numerous self-organised repetitions of recurring comparable situations. In early stages, only focus on one basic tactical competency. Later, one or two dimensions can be added.
- *Diversification*. Initiate variability so different classes of movements and actions are tried. Use different game forms and variations and request players "to unconsciously come up with new ideas and solutions for different situations in a variety of embodiments" (p. 45).
- *Deliberate-Coaching*. Avoid specific, goal-oriented instructions and external information impulses, engage with players in open considerations and only provide few, calm instructions.
- *Deliberate-Motivation.* Provide instructions that cause a promotion focus by means of using positive connotations and reward contingencies.
- *Deliberate-Practice.* In later stages, main focus should be to effectively foster individual performance, by making more structured units with advanced, task-centred games where learned solutions are applied. Repeat and explore convergent solutions in given situations, "to develop a match plan for different kinds of solutions" (Memmert, 2015, p. 96).

Leading to "trying out a multitude of different solutions […] with an amount of creative solutions" (p. 96), several of these methods are intended to provide freedom. With "free and joyful working conditions" one can expect "positive effects on creativity" (p. 97) due to enhanced independence and willingness to take risks. This view resonates with that developed in SS1, but the D's do not explicitly target creative abilities or create situations where the players' habitual actions are challenged. Hence, as clarified below, the ideas offered in this PhD subvert and exaggerate certain aspects of the 6D model. Basically, the 6D model intend to foster tactical understanding and TC in the long term, while SS1 and SS3 facilitate creative actions and experiences during sessions. For example, the TC approach argue that external impulses (e.g., disturbing noises or instructions) reduce the players' attentional breadth and therefore limits creativity. Based on SS1, particular kinds of unspecific, but deliberately delivered informational stimuli could help players interpret the task from another perspective and thereby explore other action possibilities.

Exemplifying how 1-Dimensional-Games can be diversified during a teaching unit with six lessons, Memmert (2015) advised that the task should be changed for each

lesson, so the games are played with 1) hands only, 2) feet only, 3) bigger ball, 4) weak hand, 5) weak foot, and 6) smaller ball. For example, in an exemplified 1-D game, four attackers have to get the ball past two defenders to score a goal. In concordance with SS1, the task to only play with the weak foot or a small ball would indeed require (some) players to explore unusual action possibilities (such kinds of ideas were explored in SS3 with varying success). However, rather than diversification across sessions, the ideas offered in SS1 emphasise within-session and even within-game diversification as well as design of more atypical games and task requirements where the players cannot rely on habitual actions and e.g., help them change the way they meet the situation (i.e., intentionality).

Adhering to the 6D guidelines, possibilities to explore unusual possibilities to learn new solutions could be subjugated by the performance-oriented activities suggested for later stages of development. As argued by several studies, TC is most efficiently fostered in the early years, however discontinuation of playful, experimental activities could cause that generative capacities are not maintained in later years. With the notion of intentionality from SS1, the facilitation of creative acts involves activities where players purposefully search for unusual action possibilities. This transcends the TC methodology (and that of the NEC position, as described next), which primarily intends to increase the chance for rare, extraordinary and adequate solutions to emerge *unconsciously* during offensive gameplay (and then be explored and repeated during practice), so the opponents can be surprised, chances be created and the game be won.

4.1.6. CONTRASTIVE COMPARISON

While the TC position principally regards the best offensive team ball sport players, who can surprise opponents by successfully creating fruitful game situations for themselves (i.e., by moving to unusual positions) and their teammates (i.e., making rare passes), the perspective developed in SS1 focuses on the playful process of exploring unusual action potentials, which is relevant for all players' development. What set these perspectives apart on the playing field is the extent to which a no-look, heel or chip pass is creative.

- To be deemed as tactically creative, the player should successfully perform the pass in a competitive game situation, where this particular solution is rarely performed (or has not been done earlier in the game).
- To be seen as a creative experiment, the player has to attempt the pass for the first time, in a new way, or in a new or unfamiliar situation, and although the attempt fails, it is still considered as creative since the player acted on a novel affordance.

Hence, TC reflects the metaphors of *MAGIC* and *DESIGN* from SS2 (see *section 2.3.7*), and *INDEPENDENCE* and *NAVIGATION* may facilitate TC. Contrarily, the ideas from SS1 resemble *EXPLORATION*, *TRANSGRESSION* and *INVENTION* and their application may be used to generate personally novel action possibilities for *DESIGN*, *DECEPTION*, *STYLE*, *CHOREOGRAPHY* and other kinds of creativity.

As clarified below, personally original solutions are recognised by the constraints-led perspective, although most emphasis is still put on the novelty value in relation to socio-cultural action repertoires. While the TC scholars frame creativity in terms of decision making and cognitive processes, and mostly track the development of

creative potential over longer periods (e.g., intervention studies), the constraints-led position emphasises the situated *emergence* of creative behaviour, techniques and movement patterns, and study how contextual aspects can be manipulated to facilitate *qualitative changes* in the movement system, that is, discovery of novel and functional products. Accordingly, the following perspective focuses on situational creative states rather than creative trait mechanisms. Coming closer to the position of this PhD thesis, it employs complex, "context dependent hierarchies" to explain the emergence of creative behaviour, rather than "rigid hierarchies of universal encapsulated modules within the brain" (Hristovski et al., 2012, p. 27).

4.2. EMERGENCE OF UNIQUE SOLUTIONS

The constraints-led approach to creativity in sport is grounded in *Dynamical Systems Theory* and employs the research strategy of *ecological dynamics*. The latter studies self-organised performer-environment interactions in non-linear systems: A complex system analysis that is used to grasp the emergence of creative behaviour in sport. Therefore, I label this work as the perspective of *nonlinear emergent creativity* (NEC).

This position seems to be initiated by Hristovski and Davids (2008), who presented their work at the 2nd International Congress of Complex Systems in Sport. Since then, a wide variety of studies have been conducted to show how performance constraints shape the degrees of freedom in the movement system, facilitating exploratory behaviour, and enhancing the change for novel and functional action to emerge (Hristovski et al., 2013).

4.2.1. CONSTRAINTS-LED FOUNDATIONS

From this perspective, creative behaviour depends on the specific context of action. This dynamic context is comprised by K M. Newell's classification of three personal, task, and environmental constraints (Chow et al., 2011; Hristovski et al., 2012):

1. *Personal constraints*; unique psychological, morphological and physiological attributes (e.g., affective state, motives, skill level, preferred solutions, habitual repertoire, size, strength).
2. *Task constraints*; contextual information for the given sport activity (e.g., playing area, rules, cues, instructions, goals, equipment, number and formation of players).
3. *Environmental constraints*; physical and sociocultural influences, that are external to the agent (e.g., field surface, game configuration, playing location temperature, gravity, social ambience, social expectations, and local/national development philosophies and playing styles).

Nonlinear interactions between these changing constraints shape individualised *affordance landscapes*, which cover each player's temporary action opportunities in the performance situation, or a "hypothetical workspace" which contain all potential solutions in the given moment (Chow et al., 2011, p. 191). Hence, the basic ideas are that unprecedented action opportunities may be emerge under certain configurations of constraints and that creative behaviour is facilitated by *idiosyncratic* dynamics. For example, the notions of promotion focus and a wide breadth of attention from the TC

perspective belong to the category of personal constraints and may result in perception of more opportunities.

From a NEC perspective, sports are disordered, complex systems. At any given moment, each player possesses a different set of functionally appropriate possibilities, or *degrees of freedom*, which are constantly altered by the dynamic actions of other players. For example, teammates' off-the-ball movements and opponents' responsive activities regulate which affordances are available to the player with the ball. The actions of any player influence the actions of the others, which again impacts the first player's following actions. This social mechanism is called *co-adaptation* – all players continuously adjust their behaviour to the collective situation. Through this process, players increase their own possibilities in the game by creating good conditions for their teammates and bad for their opponents – and vice versa. In this regard, a basic premise is that sport performance is marked by *multistability*, which enable the coexistence of more than one usable performance solution in every game situation – and some of these contain novel opportunities. This is the foundation of sporting creativity and found the unpredictability of movement patterns (Hristovski, Davids, Araújo, & Passos, 2011; Hristovski et al., 2012).

Due to the metastable and co-adaptive features of the movement system no action can be reproduced in identical way across trials, due to small variances in constraints. Hence, from the NEC perspective, all *emergent*, adaptive actions are of an indeterminate nature, and therefore, grasped as creative. Moreover, creative actions are *self-assembled* – not explicitly imposed on the agent from external sources or instructions. Since all co-adaptive action patterns are unique, the creativeness of specific solutions (e.g., passes, feints, runs or tackles) is described by their efficiency in satisfying the performance goal, e.g., offensive or defensive actions that are "functional in suddenly breaking the attacker-defender balance" (2011, p. 199). Hence, all "subtle and efficient variation" of a general movement category is considered as creative performance solutions (2011, p. 187).

4.2.2. MEASUREMENT

The above assumptions have been reinforced by experiments in individual (e.g., boxing) and team (e.g., rugby) sports, where the performers' perception-action landscapes have been traced under specific manipulations of task constraints. Based on the idea that all actions are fundamentally creative, Hristovski et al. (2011) proposed that different levels of creativity could be assessed as the degree of *atypicality*, that is, the uniqueness of the given solution compared to the "socio-cultural potential landscape for the same task constraints" (p. 191). In this regard, the NEC perspective stresses that "creativity should be defined according to achievement of identified performance task sub-goals" (p. 180). Hence, it should not only be accessed according to the overall performance goal.

A high level of creativity introduces novel structures of movement configurations, while a low level partly imitates or mirrors extant configurations. Hence, creative behaviour is assessed by analysing the movement structures of *control parameters* (e.g., conventional actions) and *collective variables* (e.g., time-scaling interpersonal distance, movement configuration, angles, etc.), basically describing how the

solutions differ from traditional (Hristovski et al., 2011; 2012). For example, to classify control parameters, a set of traditional solutions are defined (e.g., for heavy bag punching) and equations are established to measure the overlap with the orthodox actions on certain parameters (e.g., whether the bag is hit in the same way). In contrast to EC, the perspective offered in SS1 would define atypicality in relation the given players action repertoire.

4.2.3. CREATIVE SELF-RE-ORGANISATION

From the NEC perspective, creative players can quickly identify new solutions when their ongoing or routine actions are prevented by opponents. Also, creativity regards the ability to suppress habitual actions and adequately *self-re-organise* subsets of task constraints in performance situations to generate novel contexts where atypical actions can emerge. For example, rugby attackers may display creativity by their ability to change or slow down defenders' running lines, which create space-time windows to increase speed and move past the defenders (Hristovski et al., 2011, p. 199). This complex process is grounded in situational knowledge of the changing game configuration, e.g., nonlinear interactions of other players (e.g., distance to the goal; running trajectories; relative positioning), which become task constraints in the endeavours to disturb defensive balance so space-time windows can be opened and explored (Hristovski et al., 2012).

Further, creative game behaviour is facilitated by purposeful production of opportunities for novel and efficient action possibilities, that is, altering environmental constraints (e.g., interpersonal distance or running routes). However, rather than memorizing several plays and preparing specific action sequences, creativity requires skills in detecting relevant information sources and producing movements so the desired action is kept within the range of affordances (Balague, et al. 2013; Hristovski et al., 2012). Creative players are able to influence the game situation to their own advantage: "This is where creativity emerges, with the need for attackers to perform deceptive actions that creates the impression of multiple different possibilities for action" (Hristovski et al., 2012, p. 33).

From a NEC perspective, all creative behaviours are fundamentally relational. However, the ability to reorganise constraints can also be grasped in terms of collective emergent actions, e.g., the shape of intra-team group's formation. Although starting the game with a set of pre-established movement patterns to break down defensive structures, player units need to reorganise their coordinated behaviour based on the situational information from the opponents' reactions. Hence, all collective movements that create space-time windows in defensive structures are defined as unique and thus creative (Hristovski et al., 2011). Again, the creative level depends on the degree of atypicality.

4.2.4. FACILITATING CREATIVE BEHAVIOUR

The level of creativity may also be captured by *explorative behaviour*, that is, a creative search for novel performer-environment configurations by passing through all available modes of behaviour to solve a task. Hristovski et al. (2011) defined exploratory activities as "a subsequent realization of a large number of movement

configurations which reveals the hierarchical action landscape under specific constraints of each performer" (p. 187). Hence, exploration is the ability to switch solutions between trials. This may be enhanced by manipulating task constraints, since greater *noise* (i.e. changing constraints, increases the possibility of switching behaviour (Balague et al., 2013). Besides exploration of a wider variety of "qualitatively different solutions", task manipulation may facilitate novelty through "in depth exploration of a single or fewer solutions" (Orth et al., 2017, p. 3).

A key interest NEC studies is to investigate how manipulations of task and environmental constraints facilitate exploratory and creative behaviour. Hristovski, et al. (2011; 2012) argued that the players' *exploratory breadth* (i.e., the variability of task performance) can be enhanced by two types of relaxation of task constraints; direct and indirect. While *direct relaxing* concerns changing the task so more solutions are possible, *indirect relaxing* is about supressing habitual actions. Both kinds of relaxation increase the probability of *qualitative reorganisations* in the movement system (i.e., when components are coupled in novel ways) and thus enhance the chance for *action insights* (i.e., rapid discovery of a novel opportunity) and atypical, functional solutions. As Hristovski et al. (2012) suggested, "anything that leads to instability of the habitual action may lead to the invention of new action" (p. 32).

Similar ideas are presented in SS1 and SS3, where it is argued that exploration of novel action potentials may be facilitated by suppressing habitual actions, that is, designing training activities where the players' usual ways to (inter)act are insufficient to solve the task, requiring them to come up with unusual solutions. Moreover, the constructs of *intentionality, normativity* and *materiality* from SS1 could be characterised as particular sub-sets of personal and environmental constraints. Since most NEC scholars has focused on manipulation of task (and dynamic variations in environmental) constraints, SS1 and SS3 contributes with novel ideas as to how creative and exploratory behaviour may be facilitated during practice sessions. In this regard, an atypical contribution of SS1 could be understood as creative self-restructuring of personal constraints. For example, learning to shift perspective and entertain various kinds of intentionality when working on a sport-specific task may enable players to explore a wider variety of affordances.

Several NEC studies have explored the effects of manipulating particular constraints. For example, Torrents et al. (2016) showed that amateur and professional football players' exploratory behaviour was reduced when playing with numerical advantage in small sided games (e.g., 7v4 compared to 5v7 and 3v7). Similarly, a growing amount of field experiments examine how a variety of constraints influences interpersonal coordination patterns, displacement trajectories, structural flexibility, positional irregularity, temporal diversity and other quantifiable variables of self-organised, adaptive, emergent and exploratory game behaviour (e.g., Liu et al., 2006; Passos et al., 2008, 2009; Vilar et al., 2014; Torrents, Ric & Hristovski, 2015). It is beyond the scope of this PhD thesis to outline this line of research (which is also maintained by CDF scholars; next section), but generally these studies include constraints such as the number of opponents (Ric et al., 2016), field location (i.e., the player's relative position and angle to the goal), foot preference (Laakso, Travassos, Liukkonen, & Davids, 2017), skill level (Orth, Davids, & Seifert, 2018) and tactical

position (Gonçalves, Figueira, Maçãs, & Sampaio, 2014). These constraints variously enhance or reduce the amount, variety and type of opportunities explored by players during small-sided games and matches.

4.2.5. CONSTATIVE COMPARISON

Comparable to the transactional perspective from SS1, the NEC perspective highlights the interaction between player and environment. While NEC scholars treat creativity as a movement *product* by considering "continuous reinforcement of self-experimentation with task constraints" (Hristovski, 2011, p. 196) as a viable way to enhance the chance for creative behaviours to emerge during task performance, SS1 located creative actions in an exploratory *process* where unusual affordances are exploited, perceived or originated.

As a team's or athlete's discovery of novel actions, Hristovski et al. (2012) envisioned creativity as "the highest emergent type of adaptive behaviour of an athlete-environment system" (p. 27). Combining this statement with the above premises, it is not surprising that some NEC scholars are inclined to treat creativity as an exclusive behavioural quality of experts, i.e., that only skilled sport performers are able to perceive their interaction with the environment, spontaneously reorganise the degrees of freedom in the system to prospectively control their actions and reach novel solutions during match performance. For example, stating that creativity enables experts to constantly adapt their actions to variable constraints, Orth et al. (2017) highlighted that creative solutions emerge *in* rather than *before* the act: Players are not looking for creative actions, but they are discovered while satisfying the requirements of the game. This diverge from SS1 and SS3, where a more deliberate approach towards generation of novelty is proposed.

Exemplified by the case of the Fosbury Flop, the NEC position imply that a high creativity level may modify the way a sport is practiced, by introducing new techniques and movement patterns that did not exist previously and quickly diffuses to the domain due to their high performance-enhancing capacity. As described in *section 1.4.,* this eminent level of creativity is defined as *big-c creativity*. Lower degrees of creativity can be defined as little-c or pro-c creativity, which reflect *INVENTION* (SS2). While *little-c* occurs in non-expert contexts (e.g., recreational sport), *pro-c* creative behaviours emerges in performer-environment interactions of experts that showing "highly skilled, flexible and integrated emerging actions" (Hristovski et al., 2012, p. 28).

Finally, reflecting *EXPLORATION* (SS2), Hristovski et al. (2011; 2012) also considered the *discovery* of atypical actions in relation to the performer's *intrinsic dynamics*, that is, current "stabilized dispositional patterns of behaviour which emerge under some set of interacting constraints" (2011, p. 180). In this regard, *mini-c creativity* in sport was defined as the "discovery or adaptation of known techniques to one's own personal constraints" (2012, p. 28), whereby the learning process regards active exploration – rather than mere copying – which may entail idiosyncratic affordance landscapes (*STYLE*, SS2).

Parallel ideas were offered in SS1, where we argued that such a kind of creative learning is enjoyable and vital for player growth and sport continuation. Such

developmental and experiential benefits of mini-c actions have not been explicated by any studies based on the NEC position (besides highlighting mini-c as a likely predecessor of big-c creativity at later stages). As discussed above, NEC scholars are primarily concerned with abrupt *qualitative changes* of techniques or tactics and the fluctuating organisation in the movement system that entail enhanced performance. Resembling *NAVIGATION*, *DESIGN*, and *PRODUCTIVITY* (SS2), these creative adaptations enable players to reach specific sub-goals of matches. Thus, similar to the TC perspective, most NEC scholars has a propensity to treat creativity as a means of enhancing performance and thereby winning. However, opposed to many other contributions, the NEC perspective regards all tactical positions and not only offensive situations on the last third of the pitch.

4.3. THE CREATIVITY DEVELOPMENTAL FRAMEWORK

During my PhD scholarship another line of work started at the research community of CreativeLab at University of Trás-os-Montes and Alto Douro. With primary interest in statistical analysis of sport performance, this group e.g., defines performance variables and delineates measures of tactical behaviours (e.g., capturing positional data, movement dynamics, ball displacement and passing networks). Based on these contributions, a range of studies analyse performances in different sports and examine the effects of variables such as substitutions, player dismissals, time-outs, time period between matches and pitch area restrictions on physical, technical and tactical performance. Similar research interests are evident in the group's creativity studies, which are conducted in connection to the *Skills4genius project* and focus on the creative behaviour of youth footballers, integrating various aspects from the TC and NEC positions. Similar to my work, this project basically aims to offer alternative sport-pedagogical approaches to counteract the authoritative, linear, creativity-restraining practices of traditional development environments in sport.

4.3.1. LONG-TERM MODEL

With the ultimate aim of fostering historically creative football players, Santos, Memmert, Sampaio, and Leite (2016) outlined the *Creativity Developmental Framework (CDF)*. This comprehensive approach integrates TC research regarding practice pathways (i.e., deliberate play, diversification, deliberate practice, and specialisation) with certain well-established, sport-pedagogical approaches (Physical Literacy, Differential Learning, Teaching Games for Understanding, Constraints-led Approach). These perspectives are underpinned by principles from Nonlinear Pedagogy, whereby CDF generally advises game- and player-centred coaching with representative activities, manipulated constraints (e.g., exaggeration) and functional variability, to boost exploration and discovery. Also, targeting long-term sustainable development of footballer's creative *in-game* behaviour, CDF suggests a progressive implementation of the latter approaches, across five stages:

1. *Beginner* (2-6 yrs.): players gain "confidence and competence to move";
2. *Explorer* (7-9 yrs.): allow players "to explore and pursue new solutions",
3. *Illuminati* (10-12 yrs.): learn moving "and 'attuning' outside the box";
4. *Creator* (13-15 yrs.): the "environment guides the problem solver actions";
5. *Rise* (+16 yrs.): are all "prepared, to creative collective behaviour" (p. 3).

The initial stages comprise diversification, deliberate play and unstructured activities, with focus on basic movement skills (e.g., agility) and fundamental game principles by which appropriate techniques naturally emerge during adaptive processes in ecological settings. Later stages are specialized, with increasing focus on convergent analytical abilities. In the rise stage, manipulation of small-sided games is used "to promote randomness in player's actions" and the "ability to attune the optimal affordances under representative" games (Santos et al., 2016, p. 10). Further, creativity was operationalised by four factors:

1. *Attempts*: efforts to perform different, even not-effective, actions
2. *Efficacy*: execute "as many effective movement actions as possible";
3. *Versatility*: produce a diversity of non-standard actions within skill categories
4. *Originality*: create "new and unique actions" that others are unlikely to do (p. 4).

For Santos et al. (2016), these "creativity training components" (p. 3) are key ingredients to enhance the chance of developing creative players and "should be embodied" (p. 4) in activities focusing on a range of offensive and defensive tactical principle. These game principles are divided in *fundamental* (e.g., using gaps; dribbling attempts; gaining the ball), *situational* (e.g., creating and using space; maintain possession; improvising offensive movements) and *specific collective* (e.g., tactical awareness) principles. Hence, as opposed to the NEC and TC perspectives, and coming closer to the perspective introduced in SS1 and utilized in SS3, CDF includes explicit training of creativity-relevant abilities. Moreover, as opposed to TC, CDF includes unsuccessful attempts as a creativity variable. However, the primary focus of CDF is on developing eminent in-game creative abilities in the long term. In order to do so, gradual implementation is advised, so the game principles are grounded in different components at different stages:

- *Beginners*: Encourage the players' attempts and curiosity traits
- *Explorer*s: Efficacy (and attempts) of fundamental principles
- *Illuminators*: Versatility (and attempts) of situational principles
- *Creators*: Versatility, efficacy and originality of techno-tactical behaviours
- *Risers*: Efficacy, versatility and originality of collective performances

Here, socially recognisable novelties (i.e., little-c or pro-c) are more likely after the rise stage, due to an increased level of expertise. At the earlier stages, the CDF involve personally creative expression (i.e., mini-c), that is, discovery of internally novel solutions or techniques that promote the player's own boundaries. In this regard, Santos et al. (2016) introduced the concept of *the novice creative player*, who

> "must be comfortable to discover and reorganise personal solutions, toward a continuously challenge of their self-adaptation ability […] and to solve a specific game problem in a novel, feasible, unexpected and original way by starting a single act or flowing in a collective action contributing to team success" (p. 4).

This quote exposes the long-term focus on developing *in-game* creative behaviour. However, CDF notes that personally novel expression from beginner to rise stages "leads to the development of individual problem-solving skills in the daily routine" (p. 4) and "more adaptive and functional" (p. 10) players. This links to the perspective from SS1 in that generative capacities (e.g., active habits; openmindedness) improved in creativity-nurturing environments may play a role in solving everyday problems.

4.3.2. MEASUREMENT

Similar to the TC perspective, the CDF employs small sided games when measuring the effect of the program on the creativity components. In this regard, Santos et al. (2017; 2018) used the creativity behaviour assessment in team sports (CBATS) to assess in-game individual actions (i.e., attempts, fluency and versatility of passes, dribbles and shots) and collective behaviours (e.g., the regularity of team movements; distance to centroids of own an opposing team, measured with GPS). As Fardilha and Allen (2019) argue, these observation tools improve ecological validity and task representativeness, since it covers measures of both individual and collective actions (which are not collapsed). Moreover, the measures do not only focus on creativity, but also motor (e.g., speed, jumping and direction-change) and technical variables (e.g., passing, dribbling and shooting efficiency), as well as tactical positioning variables (e.g., regularity of lateral and longitudinal moves; indexes for spatial exploration and stretch). However, it is difficult to clarify which part of the comprehensive program that causes the various effects.

4.3.3. INTERVENTIONS

To date, only the explorer stage of CDF has been tested (Santos et al., 2017). Findings suggest that the program improved 9-year-olds Portuguese children's creative thinking abilities (fluency, elaboration, and originality, measured by TTCT) as well as individual in-game creativity (attempts, fluency, versatility). The findings on motor variables and collective in-game behaviour were less clear. Further, "a special feature of the program was to introduce divergent and convergent thinking tasks in the initial part of the training session. Possibly, these non-sports introductory activities may have played an important role in the creative thinking improvement" (p. 11). In other intervention, Santos et al. (2018) and Coutinho et al. (2018) tested the effects of similar differential learning (DL) programs. The programs primarily covered small sided games with DL activities, which prescribes constant coach-led variation of the conditions such as numerical balance, type of ball and target, pitch size and shape, manipulated body positions (e.g., playing with one's hands on the back; hands on the head; with arms raised; an eye blindfolded) and with different obstacles on the pitch (e.g., robes).

Compared to a control group playing traditional soccer, Santos et al. (2018) showed that a 5-month DL program (30 minutes per a week) had small to moderate effects on U13s and U15s attempts and versatility, and small effects on the U15s originality. Based on the idea that attackers – as opposed to other tactical positions – require more unpredictable, versatile and creative movement patterns to break down defences and play in small spaces in the central zone, Coutinho et al. (2018) studied the impact of DL program on U15 and U17 football attackers' creative in-game performance. Compared to teammates, who participated in regular training, the 10-week program (two 25-minute sessions each week) improved the U15 players' fluency and versatility, but not attempts, and no effects were found for the U17s. This was explained with increasing convergent thinking and focus on team tactical organization with increasing age (as advised by the CDF) and low focus on fluctuations (i.e., DL activities) in earlier stages.

The latter supports the relevance of working with the U17s coach in SS3 (see *section 2.4.*). Unfortunately, he rejected most of my suggestions for DL-like activities since they were not match-specific. To clarify, I was not familiar with CDF or DL at the time of the AR, but had somewhat similar ideas. The main reason for advising non-transferable activities in SS3 was that they could create unfamiliar situations where players could not rely on their habitual actions. Also, this would constantly challenge the players to adapt their actions and require them to change their way to meet the game. Similarly, CDF elaborates that the changing conditions creates an unpredictable and enriched environment (EC; with a high level of *noise*), which facilitates player development by eliminating repetitions (and corrections) and requiring movement variability (Santos et al., 2018). Among others, DL improve the players' ability to "adapt against environment disturbances" and prepare them to "perform novel configurations during the game" (Santos, 2016, p. 10).

Evidently, several DL activities are similar to those suggested in SS1, e.g., "playing with different materials" and making "novel modifications of the rules in small-sided games, e.g. 'you are not allowed to use the same skill more than once during each possession' (p. 502). The idea in SS1 is that the players come up with the solutions themselves, through self-regulated learning. In contrast, DL is coach-driven, e.g., explicating when players should raise their arms, or put them on their back. Nevertheless, from the perspective of SS1, the DL programs may facilitate creative actions during training that was not captured by pre-post designs, e.g., leading players to explore (discover, exploit or invent) unusual affordances in the novel situations, which require them to break with usual patterns of actions. While SS1 situates creativity in these adaptive actions, the CDF interventions test whether continued exposure enhance creative abilities. Exploring the players' experiences in these activities could be avenues for future collaborations across perspectives.

4.4. CONCLUSIVE CONTRASTS

The three predominant perspectives can be contrasted by their focus on when creativity should be nurtured. First, the TC perspective (*section 4.1.*) maintains that creativity is most efficiently developed early in life. Hence, many intervention studies on TC are performed with children. Rather than considering social or cultural variables, the quality of coaching, or demands of the game, this is based on early TC studies showing that the most creative players took part in more sport-related unstructured play in their early years (Memmert et al., 2010) a study showing that it is hard to develop TC among youth football players (Memmert, 2010) and evidence from neuroscience (e.g., density and number of synapses and glucose uptake in cortexes related to creativity) suggesting that peaks in creativity occur at the age of eight, while adolescents and adults have a low sensitivity to creativity training (Memmert, 2015). This idea is also based on Memmert's (2011) comparison of 7-, 10-, and 13-year-old handball players' scores on domain-general and sport-specific divergent thinking tasks. While the creative abilities increased from the age of 7 to 10, a plateau was found between the ages of 10 and 13 (i.e., no differences between 10- and 13-year-old's scores on both tests). The role of sport pedagogy or environmental aspects was left unnoticed, but it was stated that the educational system

– the "main dampener" of domain-general creativity – should "play a less significant role" in terms of sport-specific creativity (Memmert, 2011, p. 100). Interestingly, however, this plateau occurs in a period where specialisation and/or investment often takes place, and consequently an increasing amount of deliberate practice to optimise performance and a reduced amount of pleasurable and playful activities (Côté, Baker, & Abernethy, 2007).

For example, as argued in SS1 and considered in *section 2.4.5.*, the increased fear of social evaluations and focus on result and appropriate actions that accompany age transitions signify a need for facilitating creative actions throughout the players' developmental stages. Working with creativity may discharge some of the challenges faced by adolescent players. While behaviourist approaches often entail a fear of failure (Light & Harvey, 2015), this may be reduced in creative environments, where all kinds of actions are allowed and mistakes have no negative consequences (Rasmussen & Østergaard, 2016). Although creativity may be more efficiently "learned and stored early in life" (Memmert et al., 2010, p. 12), this does not reduce the importance of applying creativity nurturing coaching strategies later in the players' life. Especially since this provides an opportunity to implement training of creative abilities in more complex drills and tasks.

Focused on outlining the emergent nature of creative and explorative behaviour, the NEC perspective (*section 4.2.*) do not explicitly address when creative abilities can or should be developed. Hristovski et al. (2012), argued that creativity, that is, "situational functional adaptations of actions" (p. 28), requires an adequate level of expertise (e.g., attentional skills and ball control), but also stressed that "expertise is neither a necessary, nor sufficient condition for establishing highly novel athlete-environment relationships" (p. 28) and facilitating the invention of novel actions during practice (but that mastery of the novel technique is required for later successful implementation during matches). Extending this premise, SS1 suggests that all players at all levels will be able to creatively exploit, perceive or generate unusual action possibilities under the right constraints. As discussed in SS1, the benefits of doing so exceed the game context.

The creative ability to self-reorganise task constraints require ample sport-specific skills, but it would be possible for coaches to manipulate task constraints at all levels. This is utilised by the age-dependent model of CDF, which advises a progressive training of creative abilities from beginner to rise stage (*section 4.3.1.*). As Santos et al. (2016) highlight, "the CDF stresses that players should be free to explore the possibilities unhindered and create without limits throughout all the developmental stages" (p. 10). This resonate with the perspective in SS1, where the creative exploration of novel action potentials (like growth and the other suggested outcomes), is important from childhood to adulthood. This is supported by SS2, where coaches for recreational children's teams, elite youth team, and senior professional football perceived (various kinds of) creativity as an important aspect. Yet, with the circumstances of SS3, it may be difficult to suddenly start working with creativity at the U17 level, that is, if the players do not have experiences with this kind of training, if coaches lack arguments for (or understanding of) the benefits of doing so, and are limited by result orientation and performance pressure.

4.5. AVENUES FOR FUTURE RESEARCH

Based on this overview of the TC, NEC and CDF perspectives on sporting creativity, and informed by the pragmatist principles outlined in *chapter 3*, I point to directions for research that may expand and nuance the role of creativity in sport. Some of these were taken up in the present PhD studies. First, the emphasis on cognitive-perceptual oriented definitions, conceptualizations and measurements calls for studies on socio-cultural and embodied variables. Second, the overweight of studies that focus on in-game creativity and performance should be supplemented with studies that explores the benefits of being creative in sports, that is, other than enhancing the team's chance of winning. Third, and in conjunction with the latter two requests, there is a need for more qualitative research on creativity in sport (SS2), especially;

- theoretically informed case-studies on the pathways of individual athletes
- exploration of leader, coach and participant perspectives on creativity (SS2) and their experiences of participating in creativity interventions (SS3)
- contextualised studies of creative practices in organised and self-organised sport environments to create an in-depth understanding of the particular kinds of deliberate practice and deliberate play that nurture creativity (SS2/SS3)
- in-depth portrayals of the particular moment conditions (e.g., personal and environmental) for creative expression in sport (this was an initial aim of SS3, but was changed before beginning the action research process (*section 6.4.2.*)
- collaborative research based on consultant work, practical workshops and/or experiential learning with sport practitioners to enhance creativity (SS3).

CHAPTER 5. STATE-OF-THE-ART

This chapter outlines the field of creativity studies in sport. To grasp this field in its depth, breadth and complexity, a horde of perspectives, with diverse theories, presumptions, and methods and operating at diverse analytical levels, will be classified, summarised and synthesised. The purpose of this review is to provide a comparative overview of the assumptions, agendas and applications of studying creativity in sport, especially regarding antecedents, facilitators and consequences of player creativity. Not to pinpoint superior positions, but to stress that different perspectives can learn from and supplement each other.

Further, summing up the state-of-the-art enable me to address gaps and tendencies in contemporary research, highlighting key considerations, challenges and limitations. As argued by several creativity scholars, familiarity with the extant knowledge within an area (e.g., Glăveanu, 2010; Amabile, 2013) as well as identification, articulation and analysis of problems (e.g., Amabile, 2013; Runco, 1993) are vital for creating work that progress fields and practices, and change the way people live. Also, this overview brings readers up to date on the status of the field and elaborates on the relevance of my PhD studies.

The selected literature was limited to peer-reviewed journal articles published between 1989 and 2018, written in Danish or English, and with access to the full-text. Also, as shown in *section 1.10.*, the review included studies on creativity pertinent to participants in competitive interaction sports that require in-situ problem solving, direct counteractive moves and have rules on how to score points. More details on the literature search, inclusion criteria and appraisals of quality are found in *appendix A*.

Based on the findings of the review, the chapter is closed with an integrative model and key dichotomies of the field. Before outlining the state-of-the-art, I describe the type of literature review, the review questions and the analytical method.

5.1. INTEGRATIVE AND NARRATIVE APPROACH

The *integrative synthesis* was the main guideline since this is useful in connection with review questions involving identification and description of current evidence (Williams & Shaw, 2016). Additionally, this review was inspired by the *narrative overview,* which is useful to "pull many pieces of information together" and provide a "broad perspective on a topic" (p. 103), through textual summaries of numerous studies and not necessarily providing critique of all selected studies (Green, Johnson, & Adams, 2006). Besides describing and recapping the main content of the qualified studies, the chosen review methods enabled careful exploration of similarities and differences between papers. More specifically, results of a narrative overviews are formed as specific knowledge summaries, which are useful for practice and policymaking (Green et al., 2006). Further, as opposed to meta-synthesis, among others, the integrative approach allowed iterative combination and comparison of data from diverse methodologies and research designs as well as both theoretical and empirical contributions, which enhance the holistic understanding of the topic under review (Whittemore & Knafl, 2005). Reflecting the view of pragmatism, knowledge created by quantitative and qualitative approaches is not mutually exclusive.

As advised by Andersen, Ottesen and Thing (2018), a clear, transparent and systematic approach is required to navigate the comparison of data based on varied epistemological presumptions. Therefore, as outlined in *appendix A*, attention to concordant review guidelines (Green et al., 2006; Whittemore & Knafl, 2005; Williams & Shaw 2016) ensured that structured steps were followed when collecting, analysing, thematising, and synthesising the relevant literature to reveal patterns and relationships. This enhanced the rigour of the review and the quality of its conclusions (Whittemore & Knafl, 2005).

Prior to focusing the review by screening for conceptual clarity and context, the literature search (see *appendix A*) yielded approximately 4250 potential sources. Eventually, these papers were condensed to a final selection of 114 relevant papers (40 of these were used to describe the perspectives in *chapter 4*), covering 60 quantitative, 21 qualitative and 33 philosophical papers. *Table 1* demonstrate an increasing interest in studying creativity in competitive interaction sports.

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1	0	0	1	2	0	1	2	0	1
1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	2	2	2	3	1	1	5	4	2
2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
6	10	7	8	2	10	5	16	6	13

Table 1: Number of annual papers meeting the inclusion criteria for the review.

To clarify, I did not intend to do an *interpretative synthesis*, where secondary analyses of all gathered data are used generate a new theory (Williams & Shaw, 2016). Instead, the idea was that bringing individual studies together at a higher level of abstraction – while preserving their original meanings – allowed me to expose divergence and convergence, variations and relationships in the field.

5.2. FORMING REVIEW QUESTIONS

The main objective of the literature search (see *appendix A*) was to dissect and synthesize the research literature regarding creativity in sports to become familiar with the status quo of this field and provide an overview of the perspectives that scholars have been taking in the past. The first step of doing a review is to develop review questions to guide the literature search and the reading of the material (Williams & Shaw, 2016). Initially, the search was guided by the question what does the published literature contribute to our knowledge regarding creativity in sporting activity? Further, five sub-questions were addressed during the review, namely 1) how is creativity understood, 2) why is creativity investigated? 3) how is creativity investigated, 4) which theoretical components are linked with creativity, and 5) what messages are derived regarding creativity?

These questions helped me expose they varied ways in which creativity has been grasped by sport scholars in the past and the different factors and conditions that have been associated with creativity in sporting activity. In this regard, the entire text of each eligible paper counted as data in the review – not just sections labelled "findings" or "results", as in qualitative meta synthesis (Williams & Shaw, 2016).

5.3. DOING THE ANALYSIS

First, all eligible papers were re-read to ensure familiarity. Then, guided by the purpose and the review questions (Green et al., 2006), the data extraction consisted of note taking regarding 1) purpose, 2) research design, methods and sample characteristics, 3) explicit or implicit understanding of creativity, 4) main results about antecedents, facilitators and consequences of creativity, and 5) practical implications. These five variables served as the initial classification system, which facilitated the systematic comparison of the studies (Whittemore & Knafl, 2005). Basically, any reference to the concept of creativity was noted and interpreted, resulting in writing a synopsis of each study, using creativity as the frame of reference without abandoning its original meaning. Then, the data was reduced by iteratively coding, comparing, grouping and summarising the extractions in a coherent manner, while concurrently validating the emerging themes by checking the congruence of each paper to prevent premature thematic closure and exclusion of pertinent papers. Further, the principle of *constant comparison* was applied by first comparing item to item to form provisional themes and then contrasting and synthesising the initial themes (Whittemore & Knafl, 2005, p. 550). Contrasting and comparing these sub-groups in *data displays* (p. 551) and drawing conceptual maps between them helped me identify relations, variations and patterns, e.g., common abstract concepts or shared fundamental assumptions, usable to integrate more studies in distinct themes, where particulars were subsumed into meaningful higher-order clusters of commonalities.

5.4. THEMATIC FINDINGS

As presented in the following 13 sub-sections, the themes that emerged from the analysis showcase the areas of consensus and contradiction in the last 30 years of research on player creativity in competitive interaction sports. While each theme showcases a unique depth of the field, these are combined in an integrative summation of the review, taking form of a conceptual scheme that portrays the breadth of the field. As elaborated below, the themes capture these varied approaches to creativity in sporting activity. These themes signify that the creativity in sport is approached as

1. techno-tactical progression of sport disciplines
2. a distinguishing characteristic of sporting geniuses
3. an aesthetic category of sport performance
4. interpersonal acts and performances
5. spontaneous, in-game problem solving
6. a capability to handle everyday challenges of elite sports
7. a condition for sport enjoyment and personal development
8. a capacity to resist supressing structures of sports and societies
9. a natural quality and consequence of sport participation
10. an impossibility within limiting sport structures and practices
11. a sport-specific construct of particular developmental pathways
12. a target of sport pedagogical approaches and techniques
13. surprising in-game acts that augments competitive success

5.4.1. CREATIVE DOMAIN ADVANCEMENT

Creativity among athletes and teams contributes to the technical and tactical progression of their discipline and thereby change the way their game is played or renew certain practices (Callaghan, Moore, & Simpson, 2018; Campos, 2014; Colás, 2015; Garnett & Surujlal, 2009; Hopsicker, 2011; Hristovski et al., 2011; R. Jensen, 2014; Lacerda & Mumford, 2010; Merkel, 2006; T. Miller, 2008; Orth, van der Kamp, Memmert, & Savelsbergh, 2017; Tanggaard, Laursen, & Szulevicz, 2016). In the world of sports, there are a variety of exemplary cases where sports or sporting practices have been renovated by athletes or teams who realised unprecedented way to participate, play or perform. For example, Callaghan et al. (2018), offered a list of well-known (early and recent) examples to demonstrate the endless opportunities to invent new and unforeseen ideas, such as "the 'slam dunk' in basketball, the 'reverse sweep' and 'reverse swing' in cricket, the 'Cruyff turn' and 'sweeper-keeper' in football, Chris Froome's 'super-tuck' in the 2016 Tour de France, and the Italian Rugby Union team's 'anti-rucking' strategy" (p. 48).

As argued by Campos (2014), highly creative athletes are agents for promoting the growth of their sporting communities, by imagining and actualising original solutions so the extent of possibilities that are envisaged and pursued by others is enriched. Miller (2008) noted how Pelé's marvellous vision, ball control, speed and balance redefined the boundaries of football – his eminent skills shaped new forms, meanings and realities of the game. Thus, Pelé and the aforesaid stars could be seen as sporting geniuses (see *theme 2*), that is, exceptional performers who transcend their epoch, break existing chains of tradition, bring innovative strategies that enhance competitive success and establish novel orthodoxies in their sport (Lacerda and Mumford, 2010): "The genius isn't a follower of rules: he or she is a creator of rules […] emulated by others seeking that same success. [The] genius will set a new trend, attracting numerous followers or imitators." (p. 184)

Similarly, Hopsicker (2011) stated that when innovative performances are delivered by geniuses with 'superior abilities and willingness to test the current conventions' (p. 115), possibilities for emulation arise so new standard models are formed. However, it is not only geniuses that drive creative domain advancement. In a cultural analysis of basketball in the 19th- and 20th-century modernism, Colás (2015) described the micro-history of dribbling. The early dribble "evolved from an accidental loss and recovery of the ball into a deliberate play deployed by an individual to escape a defensive double team or a trap" (p. 275). Changing its embodied execution from rolling the ball on the floor to two-handed, and eventually, one-handed bouncing, dribbling later became a preferred way to "alter unfavourable spatial configurations for tactical advantage" (p. 275), e.g., creating open spaces. These advancements enabled direction changes, dribbling without watching the ball and allowed ball-handlers to move through space in inventive ways, invited by particular dynamics of the game. Thereby, dribbling became 'a creative means of defying (or taking agency over) the spatial (and social) laws of the basketball universe', or 'an active assimilation and creative transformation' of spatial conditions (p. 275). Hence, the creative evolution of the dribble entailed more creative, inventive, and artistic gameplay.

5.4.2. HALLMARK OF SPORTING GENIUSES

While the above show how revolutionary performances of geniuses sculpt the form and meaning of playing a particular sport, this theme pinpoints creativity an distinguishing attribute of sporting geniuses (Grix & Carmichael, 2012; Higgins, 2018; Hopsicker, 2011; Lacerda & Mumford, 2010; Martin & Cox, 2016; T. Miller, 2008). The basic idea is that exceptional, influential creators have to be experts in their sport discipline to perform in ingeniously creative ways. Reflecting *MAGIC* (SS2), geniuses are portrayed as being able to see things that others players do not. For example, the legendary ice hockey player, Wayne Gretzky is described as noticing elusive patterns that others miss and seeing scoring possibilities that no one else have ever seen (Campos, 2014, Hopsicker, 2011).

Characterising sporting geniuses as performers capable of highly creative behaviour, that is, execute novel moves and tactics, Hopsicker (2011) explored *preparation*, adoption of a *risk-taking* attitude and *dwelling* as three benchmarks for becoming a creative sport genius. While *preparation* signifies habituation of specific skills though great amounts of deliberate practice, *risk-taking* involves a shift from relying on others (e.g., coaches) to relying on the self and accepting mistakes as well as inappropriate or illogical decisions during improvisation. *Dwelling* regards a pre-reflexive state that allows top performers to imaginatively and intuitively make split-second decisions during performance. Efficiently filtering irrelevant information, they anticipate and project the future path of the game to handle the changing game situations in creative ways (Hopsicker, 2011). In an analogous contribution, Higgins (2018) delivered *creativity, self-belief* and *risk-taking* as three mutually reinforcing traits of sporting geniuses. Here, creativity regards "seeing further and more flexibly than others, generating original strategies, implementing new bodily movements" (p. 304) and thereby surprising both opponent(s) and spectators. Additionally, outlining Roger Federer as a tennis GOAT (Greatest of All Time), Higgins argued that the latter three distinguishing traits of geniuses only flourish in conditions where performers are "subsumed by an ideal performative fit" (p. 297) on the developmental, cultural, temporal, existential, and biogenetic levels. Only in such cases, their performance is "potentiated and actualised in ideal ways relative to the competitive demands" (p. 308).

What appears from the above is a common idea that eminent sporting creativity requires a vast amount of goal-oriented practice. However, the content of this practice is rarely specified. For example, Hopsicker (2011) did not discuss how his benchmarks could be achieved – only presented them as targets. Also, Lacerda and Mumford's (2010) notions of intuition and instinct indicate that (the route to) eminent creativity may be beyond explanation. On the contrary, Martin and Cox (2016) presented a vivid illustration of the cultural and interactional foundations for development of the athletic creativity of Steve Nash – a Canadian point guard, who received the MVP award of the NBA twice. Grounded in position exchange theory, a life positioning analysis showed how particular interpersonal exchanges with family members, peers and coaches during Nash's childhood and early career played a central role in developing a range of creative qualities.

5.4.3. AESTHETIC DIMENSIONS OF CREATIVITY

Captured by Baurain's (2010) announcement that predictable solutions are punished, but creative performances "leaves us breathless" (p. 57), the present theme regards aesthetic dimensions of creativity in sport (Aggerholm, Jespersen, & Ronglan, 2011; Baurain, 2010; Campos, 2014; Edgar, 2015; Grix & Carmichael, 2012; Higgins, 2018; Huang & Wu, 2009; Lacerda & Mumford, 2010; Lucifora & Simmons, 2003; Rubin, 2014; Tuncel, 2016). For example, Lacerda and Mumford (2010) argued that the original creative performances of geniuses add *aesthetic value,* and thereby contribute to human wellbeing. Particularly, successfully executed original actions and strategic innovations please and fascinate sport audiences. From this view, it gives a beautiful experience when watching athletes freely control their abilities because it seems "effortless and gracious as opposed to awkward and strained" (p. 187). Offering a case of such aesthetic pleasure, Higgins (2018) depicted Roger Federer's style as "balletic beauty" (p. 305) and argued that this aesthetic attraction reaffirm that Federer is a GOAT (see *theme 2*). While Higgins finds aesthetic pleasure is situated in the unique and virtuous playing style of expert athletes, others focus on the aesthetic appreciation of novel performances. For example, Lacerda and Mumford (2010) described Johan Cruyff's first exhibition of his renowned "Cruyff turn" (i.e., Netherlands vs. Sweden, 1974 World Cup). Perfect execution of this gracious move has some aesthetic qualities, but "the creativity manifested by Cruyff in making the innovation, on that first time it was publicly displayed to a global audience, give it additional aesthetic value" (p. 190). Like artistic replicas, sporting imitation only partially recreates the original aesthetic value, which was born of imagination rather than mimicry.

In a more inclusive account, that not only regards the value of originality, Edgard (2015) argued that football is not just about excitement and entertainment, but pleasure. Drawing on Gaston Bachelard and Maurice Merleau-Ponty and he portrayed football as a "contest over space" (p. 164), and players as *poets of space*, who need to imagine, creatively, how to create and inhabit different places on the pitch to enable own competencies to flourish and prevent those of the opponent(s). The foundation of aesthetic appreciation does not only lie in the complex, fine-tuned interactions among players, but is primarily constituted by the players' creative imagination, embodied in spatial awareness. Further, our pleasure of the game, "in play or reverie, is disciplined by our knowledge of the rules, the strategies and the history of the game" (p. 164). Daydreaming about football, spectators anticipate what might happen, and remember what did happen or might have happened.

5.4.4. INTERPERSONAL CREATIVE ACTS

This theme stress that creativity arise from the interplay between players. Accentuating that creativity occurs *between* and not *within* players, these scholars stress the relational foundations of creative sport performances (Aggerholm et al., 2011; Baurain, 2010; Bjurwill, 1993; Callaghan et al., 2018; Edinborough, 2012; Hardes & Hogeveen, 2016; Hristovski et al., 2011; Muller, 2014; Sawyer, 2015; Tanggaard et al., 2016). For example, Tanggaard et al. (2016) offered a materialized and distributed perspective on creativity in handball, where distributed creativity was defined as "physical improvisations in relationships" (p. 90). Using Actor-Network-

Theory, they stressed the improvisational element in cooperation and opposition between the players of the two teams, and reveals how material conditions co-create possibilities for their creative expression.

Equivalently, Hardes and Hogeveen (2016) used Jean-Luc Nancy's ontological notion of "being-with" (p. 285) to argue that creative sport performances are "constructed and conditioned by the particularities of our lives constituted through our various relations with others, and with the technologies and things others have touched and given agency to" (p. 288). Challenging common, individualised accounts of flow and skilful coping, they argued that an athlete cannot be "alone in the zone of optimal performance" (p. 288). Instead, their being-in-the-world is conditioned by their interactions with others. Hence, athletes are conceived as unique and open singularities, not self-enclosed subjects: "One cannot be in relation without exposed singularities and one cannot be a singularity without being in relation with other singularities" (p. 286). Iterative singular experiences are always open to 'other and new ways of being in the world' (p. 287) – a foundation for possibilities of creative experiences in sport (see *theme 7* and *9*).

Another relational approach was presented by Aggerholm et al. (2011), who understood creative sport performances as those instances when a player transcends the expectations of opponent(s) and produce advantageous game situations. From this perspective, an act of game creativity, the feint, was described as the ability "to intentionally and within the constitutive rules build up and transcend the expectations of the opponent(s) for the sake of winning an advantage" (p. 348). Based on a detailed philosophical analysis of the social event leading to a situated creative performance, the "social movement phenomenon" (p. 351) of feinting was divided in four phases, which show that feinting regards creating a special kind of relation, with distinctive kinds of bodily and intersubjective awareness.

> 1) *The appearance;* perform gestures to be put on display, e.g., slow down, seek social tension and invite an intense encounter in a flirtatious manner to attract the other's attention.
> 2) *The seduction*; "spiritual duel" (p. 351) where misleading expectations are built up, e.g., abrupt, exaggerated moves that unbalance or pretending acts that captivate others.
> 3) *The commitment*; finalising the duel by instantly choosing and effectuating a move that drops the seduced, transcending their expectations, e.g., sudden discontinuity or variation.
> 4) *The value*; whether the feint made sense and made a difference in relation to the shared objective, e.g., not only worked in the isolated situation but also produced an advantage.

5.4.5. SPONTANEOUS IN-GAME PROBLEM SOLVING

This theme regards different kinds of in-the-moment creativity, which are conceived to amplify sport performance by resolving particular in-game challenges. Outlining different kinds of situated creativity as central assets of sport efficiency, these studies describe various aspects of problem-solving during sport performance, which e.g., require unexpected responses, or improvisational, inventive solutions (Bjurwill, 1993; Callaghan et al., 2018; Campos, 2014; Duricek, 1992; Erhardt, Martin-Rios, & Harkins, 2014; Hopsicker, 2011; Lacerda & Mumford, 2010; Leso et al., 2017; Orth et al., 2017; Ovens & Smith, 2006; Rubin, 2014).

While some examine how in-game problems are best overcome by experts (*theme 2*) who can recognise "the varieties of potential pathways" (Hopsicker, 2011, p. 120) during the game, or combine some "unrelated ideas to find new solutions" (Lacerda & Mumford, 2010, p. 189), others consider surprising, fresh and effective actions enacted against opponents of a similar level. The latter was the case in Campos' (2014) philosophical inquiry of how sportspersons can conceive of creative solutions. In this regard, creativity was defined as "the ability to respond to the physical challenges encountered in the practice of sport in spontaneous and imaginative ways on the basis of carefully cultivated physical and mental – or bodyminded – habits" (p. 54). From this perspective, creativity renew the path of the game and prevent it from being ordinary (*theme 4*): Creative players can imagine and enact "fresh possibilities that are not usually anticipated or expected by others" (p. 60) at the same level of participation. This is especially required in unrehearsed and unexpected problems emerging in matches, where the ability to try new possibilities depends on the player's perception and interpretation of the challenging circumstances, as well as the ability to instantly imagine and compare possible alternative ways to solve the challenge.

Another take on the performance-enhancing function of creativity was presented by Rubin (2014), who portrayed Danie, a Rugby coach, who perceived the game as an uncertain, magical, process of artistic creation. In this regard, spontaneous actions were understood as situated, creative acts. Creative, spontaneous acts were believed to be vital in rugby, since team responsibilities and coaching structures restrain the players decision making; the time required to "recall and implement a set structure can result in lost space and a missed opportunity" (p. 710). Thus, Danie decided that spontaneous moves were more effective than coach-imposed moves. When coaching, he emphasised inventiveness and creativity, by requiring players to react instinctively to each other in "series of open encounters" (p. 710) instead of deciding what to do in advance. Further, dismissing any teaching of tactical patterns and the notion of "repetition to perfection", he urged his players to "answer each other's improvised decisions" (p. 710) and to try new tricks and feints whenever they wished to, and failures were accepted as unavoidable possibilities.

As opposed to most of the earlier themes, where various kinds of *in-game*, sport-specific, creativity were situated in different performative aspects, the following focus on *pre-* and *post-game* creativity. Thus, attention is drawn towards everyday or domain-general creative abilities in sport, meaning that creativity is not located in match-specific behaviour.

5.4.6. FOUNDATION OF SPORTING EXCELLENCE

This theme features creative abilities as significant qualities for talents. In other words, creativity is portrayed as a supportive psychological characteristic, life-skills, or psycho-social ability that help prospective athletes achieve an elevated level of sport performance (Andersson & Maivorsdotter, 2016; Bernacka, Sawicki, Mazurek-Kusiak, & Hawlena, 2016; Durand-Bush & Salmela, 2002; Everhart, Kernodle, Turner, Harshaw, & Arnold, 1999; Issurin, 2017; Kováč, 1996; Richard, Abdulla, & Runco, 2017; Richard, Lebeau, Becker, Inglis, & Tenenbaum, 2018; Veraksa & Gorovaya, 2012; Vestberg, Gustafson, Maurex, Ingvar, & Petrovic, 2012; Wu, Lee,

& Tsai, 2012; Wu, Tsai, & Wang, 2011). In a retrospective exploration of Olympic champions, Issurin (2017) identified creativity as a personality trait that supported willingness to perform large amounts of high-quality practice, that is, an "exceptional attitude to training" (p. 2006). Equally, ideas are found in the work of Durand-Bush and Salmela (2002), as described in *section 1.6.*

Based on Dewey's idea that creative actions are necessary to achieve contextual continuity when meeting of the new and the old, Andersson and Maivorsdotter (2016) connected creativity to the habit changes that are necessary during a professional career, e.g., when facing new coaches, clubs, cultures, playing styles and teammates. Analysing processes of *self-transformation* in Zlatan Ibrahimović's career, they exhibited how varying embodiment of skills and techniques occurs in relation to changes in the learning environment. The career narrative shows that creative actions were required in several transitions (e.g., Ibrahimović's encounter with the Italian football mind-set and Juventus coach, Fabio Capello), where Ibrahimović e.g., transformed from being a dribbler, who focused on impressing the crowd with artistry, to becoming a bruising striker, who applied artistic dribbling skills to score goals and win games. Initially regarded as "crazy stuff", artistry was transformed into purposeful acts. In closing, it was argued that "creativity and artistry are not merely technical skills and 'wows!', but should be seen in the light of a specific orchestration of an entire career path" (p. 13). This study is particularly interesting, since it basically applies the same ideas as I did in SS1. While Andersson and Maivorsdotter focus on prolonged career transactions with shifting environments, SS1 focus on creative actions as a result of situated transactions in changing practice conditions. Accordingly, another level of creative control is pursued in training activities, where players are required to take creative actions to achieve contextual continuity when meeting novel or adapted tasks, where it is insufficient to do as usual.

While the above interpretations were based on qualitative approaches, most papers in this theme relied on correlations between general creative abilities and performance-related aspects of sport. For example, highlighting creativity as a 'distinct feature of talent' in sport (p. 65), Kováč (1996) found a positive relationship between divergent thinking and football coaches' ratings of 14 to 17-year-old Slovakian players' football performance. Divergent thinking was measured by figural forms of TTCT[iii] and Urban's Creativity Test[iv]. Additionally, Kováč discovered that higher creativity scores were positively related to better school grades. Suggesting a possible explanation for these results, measures from a School Stressors Inventory showed that football players with a better creative memory (i.e., measured by pictographs) easier coped with stress by means of a "barrier memory" (p. 65), which made them less affected by failures.

Extending the idea that general creative abilities are prerequisites for performance in sport, Veraksa and Gorovaya (2012) revealed that young footballers with high TTCT scores on figural elaboration and fluency more frequently used imagery techniques, which are linked to boosted sport performance. Further, Vestberg et al. (2012) showed that high-division Swedish football players outperformed low-division players in a divergent thinking (i.e., connect all dots in a square in as many ways as possible in 60 seconds). Also, the players with high creativity made most goals and assists in the two succeeding seasons. Further, seeing innovativeness and creativity as driving forces for

progress in sport, Bernacka et al. (2016) showed that *non-conformity*, a psychological trait of creative people (e.g., comprised by independence, perseverance, courage), helped combat athletes apply task-oriented, rather than emotion- and avoidance-oriented coping, implying that creative individuals are able to transform difficult situations by planning and taking concrete actions in order to solve a given problem.

Studying the relationship between Canadian athletes' everyday creativity and skill level, Richard et al. (2017), showed that expert athletes exhibited a higher level of flexibility, when compared to intermediate and advanced athletes. The test for everyday creative potential contained realistic problems from a sport context, and e.g., covered the tasks of listing as many ideas as possible for how one could avoid being distracted by a competitor, and how to handle a lately scheduled training session at the time of a heavy, time-consuming school project. Adding to these results, Richard et al. (2018) showed that motor creativity is central in relation to psychological and behavioural adaptation when failing to achieve a self-determined performance goal in a motor task (i.e., time in an obstacle course). In this study, motor fluency, flexibility and originality of undergraduates involved in competitive sports at a south-eastern state in the US was assessed by an agility ladder task (i.e., six minutes; free to choose known drills, encouraged to produce new). Since adaptation is key to success in sports (e.g., linked with exploratory behaviour, performance, positive emotional experiences, and happiness), Richard et al., concluded that creativity-supportive practices should be implemented in sport environments to provide more opportunities to develop motor flexibility and originality.

This was accomplished by Everhart et al. (1999) who showed that creative abilities facilitate in-game decision making in badminton. This study covered a creative problem-solving intervention (i.e., four sessions e.g., focusing on idea and solution finding, and learning to see things differently) in a group of badminton players, ranging from novices to advanced beginners. Players in the experiential group outperformed the control group by more frequently and successfully performing actions in four of six decision-making categories. This included two tactical strategies (i.e., jamming and running the opponent), which were regarded as more complex, of "higher quality" (p. 146), and important to win matches at this level, and the running strategy required most creativity by "calling on a greater variety of decisions" (p. 147) to move the opponent all over the court.

Although showcasing that creativity have much wider implications in recreational, talent, and high-performance settings of sport than revealed by the previous themes, the majority of theme 6 still portrays creativity as a means of performance enhancement, and in turn, success. On the contrary, and supporting the ideas presented in this PhD thesis, the central message of the following themes is that the potential of creativity exceeds the gameplay contexts and have a qualitative impact on the lives of sport participants.

5.4.7. CONDITION FOR DELIGHT AND DEVELOPMENT

This theme highlight creativity a quality of practice, that is, a vital setting feature of fruitful learning environments in sport. Further, it imply that endeavours to nurture creativity in or through sport may provide inherently pleasurable experiences and

stimulate personal development (Anderson, 2001; Campos, 2014; Duricek, 1992; Muller, 2014; Rasmussen & Østergaard, 2016). Several years ago, such potentials were envisioned by Duricek (1992), who proposed creativity as "regulator of the psychosocial environment" by counteracting rigid relationships, narrowmindedness, disharmony, ordinary efficiency, and forming "unique sport personalities" (p. 181).

Other scholars highlight the enjoyment of certain variants of collaborative (Muller, 2014) and spontaneous creativity (Campos, 2014). For example, based on the notion of *creative engagement*, Muller (2014) argued that joint experiences of performance excellence provide the foundation for participating in similar ways on and off the field, and in other contexts. Thinking and acting in a patient and positive way to collectively creating game situations under the influence of a "shared energy of possibility" (p. 66) were seen as the creative basis of *shared joy*. From his view, creative engagement may refine the experiences of sports, as opposed to goal-oriented approaches or merely playing to have fun. Although espousing another view of creative acts (i.e., individually resolving in-game problems, see *theme 5*), parallel implications are offered by Campos (2014), who argue that creativity provide an enriched quality and enjoyment of sport experiences. A creative approach

> "is often more joyful and satisfactory for individuals and communities than a rigid unimaginative approach. Players with a passion for sport enjoy, and later remember and cherish, those special occasions in which they have spontaneously and imaginatively overcome a sporting challenge at their level." (p. 69-70)

Further, from Campos' perspective, creativity-nurturing sport communities, specifically cultivation of spontaneous in-game creativity, may develop participants' appreciation of the importance of *self-control* – a construct characterised by *self-discipline* (e.g., controlling distractions that discourage skill cultivation) and *self-mastery* (e.g., skilful and finetuned control over one's gifts and capacities). Re-contextualising Hopsicker's pathways to creativity (see *theme 2*), Campos argued that education for creativity in sports may help participants experience *creative control* over the evolving ends pursued in their life:

> "It is not as if the sportsperson, once she is creative, dwells always in a fixed state. Rather, through renewed preparation and self-controlled risk-taking, greater challenges […] may be tackled and new creative possibilities to solve them may be conceived […]" (p. 75)

Similar to the present theme, this PhD thesis understands creativity as a dynamic process of challenging personal habits and contextual standards, and regards generative capacities (and suitable contextual aspects) as foundations for growth and enjoyment (SS1).

5.4.8. CREATIVE RESISTANCE IN AND THROUGH SPORT

This theme highlights creativity as a capacity of people who resist – or situates creativity in the processes of resistance. Thereby, it shows how creative capacities can help sport participants persist or challenge controlling societal structures. Hence, creativity is related to suppressed or stigmatised individuals or groups who oppose and transcend limiting forces, driven by senses of independence, sovereignty, equity,

and freedom (Burdzicka-Wolowik & Góral-Radziszewska, 2014; Cherrington, 2014; Colás, 2015; Hokowhitu, 2009; Pelak, 2005; Rubin, 2014; Stewart, 2012; Thangaraj, 2010). For example, Cherrington (2014) argued that the meaning of participation in sport should be understood as a *creative experience* that depends on "the subjective appropriation of time and place" (p. 509). Supported by University basketballers' video diaries, he showed that that the open-ended, flexible, generative dynamism of everyday life in sport either entail ordinary and mundane experiences (e.g., habits, structures and disciplined repetitions required as elite athletes) or emancipatory and spectacular moments (e.g., annual ceremonies or post-game night outs). Although basketball-participation occurs in a capitalist discourse that involve performance-oriented, objectifying and routinized sport practices, the athletes' embodied experience of such activities will vary on a daily basis, depending on the subjective "appropriation and the spatial acting of place" (p. 520). The variety of lived interpretations of everyday activities enables surprises and creativity and even trite experiences may offer thrills and exhilaration. Thus, creatively bringing novel meanings to life, allow the players to momentarily suspend the norms and prohibitions of their sport and to escape the static and mundane trivialities of everyday life.

A more wide-ranging kind of creative resistance is offered by Colás (2015), who portrayed how restraining rule changes made by the *modern basketball state* in the 20th century (e.g., prohibited the dunk) intended to "wrest from the players control over the technical, tactical and stylistic development of the sport" and thereby "curtail the ascendant power of African Americans to shape the game" (p. 280). Fortunately, this institutional control was evaded by players like Kareem Abdul-Jabbar, who created "a devastating repertoire of alternative offensive moves" (p. 280). Accordingly, this analysis showed the agency of basketballers, who invented "new ways to get free" (p. 283) from institutional regulations and market forces (e.g., franchises), which "determined who could play, controlled the [talent] production process, and sought to regulate the product, and of course secured and collected profits" (p. 279). This became a trigger for creativity, which helped African Americans play "for the love of the game" rather than "for a living" (p. 278).

Another kind of creative rebellion was exposed by Rubin's (2014) political account of Rugby in the post-apartheid South-Africa, which covers as narrative of a rugby coach who empowered his players to express their freedom autonomy and self-expression through creative play. This role of creativity in fighting stigmatisation is also evident in Hokowhitu's (2009) portrayal of how Māori rugby overturned the suppressive hierarchies generated by the British colonisation. Defined as *subversion*, creativity regards developing new practices as way to resist, fracture and disrupt dominating narratives. The creative subversion of the Māori helped them resist colonial domination, disrupt and fracture the dominant savagery narrative, and become the masters of rugby – a game invented by their overlords. More specifically, the subversive element of the Māori All Blacks was a resistance to control through non-adherence to investing in goal fulfilment, effectivity and "triumphing over others" (p. 2325) as applied by the colonial Rugby.

5.4.9. SITES OF CREATIVE LIBERATION

In this theme, sports are understood as creative retreats for all – not only subjugated – participants, which free us from the limiting structures of society. Accordingly, sports are framed as an arena for creative freedom, expression and experiences, creative fulfilment and self-realisation, with innate creativity-developing properties (Anderson, 2001; Blinde, Taub, & Han, 1993; Conill Sancho, 2016; Corlett, 1996; Demir, Şahin, Şentürk, Aydın, & Altınkök, 2016; Hardes & Hogeveen, 2016; Inglis, 2004; Konstantinov, 2017; Perényi, 2010; Siegel, 1995; Spooner, 2002; Tekin & Güllü, 2010; Tekin & Taşğın, 2008; Top & Akil, 2018). Here, a common idea is that creativity will benefit sport participants in other aspects of life, e.g., coping with the changing world; improved emotional and economic wellbeing. Also, most accounts seem to assume that the creativity-developing qualities of sports occur naturally, that is, without needing any sport-pedagogical approach. At any rate, this is rarely specified and "sport" is mostly considered in a general sense.

For example, Spooner (2002) revealed that peer- and teacher-nominated creative seniors from a Canadian high school perceived their sport participation as a factor that positively had affected their creative abilities. As an avenue for displaying and developing creative abilities, sports provided them with opportunities to express creative talents that were rarely permitted during school time. A hockey player e.g., said that he was always doing crazy and weird moves, making new moves and enjoyed deking opponents. Similarly, Blinde et al. (1993) showed that US college athletes (i.e., volleyball, softball, basketball) experienced that sports provided them with enabling and creative types of power, which helped them gain control over their own lives, by means of accentuated potential and self-actualization. Allowing them to perceive their body as competent, sport participation arguably have the potential to develop the "expressive and creative dimensions of the body" (p. 52), which facilitate "a proactive approach to life" (p. 54).

Challenging traditional accounts of flow as an optimal state, or exclusive experience of expert athletes that are present in the moment and sovereignly perform on auto-pilot, Hardes and Hogeveen (2016) argued that athletes are not fixed, solitary subjects who "strive for experiences that fulfil the experiential criteria of flow that is repeatable, self-same and unchanging" (p. 292). In their relational ethics of flow (see *theme 4*), humans are seen as unique, singular beings that are in constant *flux* and always forge new relations with others and the world. From this view, it is unethical when coaches push athletes to states of skilful coping that cuts off the opportunity for creativity. Further, expounding Csikszentmihalyi's idea that flow states constitute spaces to transcend and expand the self and lead to a feeling of pushing forward the boundaries of our being, they described flow as an opening out of the athlete's self: Flow "is about excesses, ways of being anew, becoming other, and doing so creatively" (p. 287).

Addressing the availability of creative actions for all sport participants who are open to see them, willing to attempt them and experiment with them, Anderson (2001) argued that sports afford a lived "sense of sheer possibility", liberates us from "the domineering social world of the everyday" (p. 143). Thereby sports create a condition

for enacting our innate creativity, by means of discovering new ways to participate or perform. These ideas were based on Henry Thoreau's transcendentalist concerns about the limiting effects of over-civilized (i.e., mechanical) or under-civilized (i.e., animal, savage existence) livings. Humanity – and the possibility of living an "intrinsically meaningful life" (p. 141) – is brought to life on the border between these two kinds of existence. This border-world life – or frontier existence – is a dynamic, energetic, free, and undogmatic existence. In this regard, sports are seen as "sites of risk in context, of spontaneity within constraints" and catalysts for awakening our "inner wildness" (p. 142). For Anderson, we live our life as if we are blind to our creative potentials, but creative sport experiences can help us recover this aspect of our humanity. Sport make us "face the world novelly" and provide "the room to create" (p. 144). In this regard, creativity is understood as the transition of possibilities into concrete actions. For Anderson, concrete creative actions may lead to "a larger sense of meaning" (p. 144) and become sources of self-transformation and self-realization. Specifically, creativity discloses our human agency, counteract the sedating effects of everyday life (e.g., teaching that presupposes student passivity) and "awaken us to the fact that we are not only free to perceive or feel, but we are free to act" (p. 144).

5.4.10. CREATIVITY-LIMITING FEATURES OF ORGANISED SPORT

As opposed to the above, the present theme shows that certain coaching practices and social structures of institutionalised sport encompass creativity-hampering elements (Andersson & Maivorsdotter, 2016; Bowers, Green, Hemme, & Chalip, 2014; Cavallera, Boari, Labbrozzi, & Bello, 2011; Garnett & Surujlal, 2009; Lennox & Rodosthenous, 2016; Lewandowski, 2007; Memmert, 2011; A. L. Miller, 2013; Nielsen & Stelter, 2011; Oddner, 2010; Richard et al., 2017; Rutkowska & Gierczuk, 2013; Weissensteiner, Abernethy, & Farrow, 2009). Some of these studies are mentioned in *section 1.5.*

Nuancing the detrimental effect of organised sport, Richard et al. (2017) found a linear, negative relationship between Canadian Olympic athletes' years of involvement in their main sport and their fluency, flexibility and originality scores on an everyday creativity test (see *theme 6*). Further, the most creative athletes had engaged in different recreational sports instead of specializing in one sport. In this regard, it was argued that diversified experiences, natural challenges and inherent enjoyment of doing a variety of recreational sports could weaken the creativity-limiting effects of "conventional socialization" (p. 67) and that too much deliberate practice in a single sport may cause players to solely rely on prior experiences, established knowledge, and conventional thinking and thereby prevent discovery of novel solutions. Further, high amounts of rigid, formalized, and specialized training with a heavy workload may create creativity-detrimental environments.

Based on interviews with and observation of coaches and players from two sport teams characterised by a flat (i.e., ice hockey) and a tall (i.e., American football) teamwork structure, Erhardt, et al. (2014) developed a grounded theory of knowledge flow in sport, which comprised two managerial knowledge flow patterns with distinctive capabilities. Whereas the flat structure had an empowering role and

enhanced creativity, the tall was designed to maximise the players' efficiency and standardizing their work. The main tasks for the American footballers was to process, understand and utilize explicit knowledge to execute a wide variety of fixed, pre-assigned plays without making any errors (i.e., from a detailed playbook covering 50 to 80 plays in any given week). Creativity was minimized by this mechanistic approach, where preferred methods to control the athletes covered "scripting, simplification and individual directives" (p. 389).

Similarly, Lennox and Rodosthenous (2016) portrayed some creativity-limiting coach-athlete relationships in boxing, where a boxing gym was controlled, commanded and orchestrated by the trainer, who became a paternal figure for his boxers. To achieve personal goals, the boxers relied on his guidance, which provided them with a "complex, and at times cumbersome, relationship with their own sense of autonomy and creative freedom" (p. 150). This "diminished sense of freedom" (p. 151) was caused by the disciplinary practices and pervasive control of the trainer, who repeated certain narrative tropes – "Do as I tell ya and nobody will control you" (p. 151). Since the boxers felt close to their trainer and experienced development, they shared this understanding and talked positively about their boxer-trainer relationship. Hence, they utterly believed that to attain creative freedom, they must first be willing to submit to his control, obey his instructions, and do what he told them to. However, when attaining this freedom, it merely concerned life- or social skills (e.g., self-confidence or good manners), not boxing:

> Boxers seemingly forsake individual freedom and creative choice when obeying the instructions of a trainer (a constant and tight constraint) with the hope of experiencing greater autonomy and agency outside of boxing. (p. 156)

In sum, these present findings point to the neglected role of coaches in terms of trusting and developing the creative abilities of players. Further, this challenges theme 9 in that a range of structures and traditions of sport mean that creative abilities are not "naturally" developed merely by participating in sports. As described below, it appears that special approaches to coaching (*theme 12*) or particular participation pathways (*theme 11*) are required to develop creativity in or through sport.

5.4.11. PATHWAYS TO SPORTING CREATIVITY

While the previous themes covered positive and negative effects of sport participation on various – mostly *domain-general* – creative abilities, this deals with of the role of different kinds of sport participation as developmental precursors to expert athletes' *sport-specific* creativity (Hendry, Williams, & Hodges, 2018; Higgins, 2018; Hopsicker, 2011; Kováč, 1998; Lewandowski, 2007; Martin & Cox, 2016; Memmert, 2006, 2011; Memmert et al., 2010; Memmert & Roth, 2007; Santos et al., 2016). Most regularly, the role of *deliberate play* and *deliberate practice* in the pathway to creativity is considered.

In a sample of 102 football players from five Scottish Academies, Hendry et al. (2018) found no relations between hours of domain-specific play (i.e., self-led football activities) and elevation of sport-specific creativity (as opposed to findings from studies within the TC perspective, as presented in *chapter 4*). Here, creative skills

were operationally defined as a player's 'overall flair and originality in making decisions and displaying unusual skills' (p. 2012) and measured by coach ratings on a 5-point Linkert scale. Positive correlations were found between domain-specific practice amounts and creativity, but as mentioned by coaches in their study, the Academy sessions involved about 50 % of free, semi- or unstructured activities. Thus, rigid divisions of "practice" and "play", "organised" and "informal" makes little sense when studying pathways to creativity (Hendry et al., 2018).

Qualitative studies provide more detailed and nuanced portraits of specific types of play or practice activities and the contextualised experiences that lead to creative abilities. For example, the case of Steve Nash (see *theme 2*), where Martin and Cox (2016) enhanced our "understanding of possible paths to athletic exceptionality" (p. 397), revealing how interpersonal exchanges allowed Nash to develop a special kind of *self-instruction*. In what family and peers saw as incredibly demanding, self-imposed practice schedules and tasks, he self-critically, methodically and timelessly broke down, assessed and challenged varied aspects of his game and set goals for how to refine and exploit his strengths and reduce his weaknesses. Among more, Nash's on-court creativity (i.e., a team-oriented capacity of playmakers, who anticipate the game and create chances) was founded found in his early engagement in football (invested in basketball when starting in high-school), where his father, a former professional, could demonstrate unpredictable tricks and help him point out finesses in the game that others had no idea about. As Nash stated, his father created a value system "for being creative, for seeing things before they happened – for tricking people, for being cheeky or witty with your game" (p. 391). It would be reductionistic to label Nash's approach as mere 'deliberate play' or 'self-organised', which might have happened if filling out a practice history questionnaire. The same could be said about the grounded theory of Weissensteiner et al. (2009), which pointed towards the importance of investing in *creative play* during the sampling years (see *section 1.5.*).

While the above provide alternative understandings on the notion of deliberate play, Lewandowski (2007) extended the meaning of deliberate practice with the notion of *constrained maximisation*. This regards practices where athletes "intentionally seek, through reflexively monitored revisions, continued variations, and deliberate experimentations, to maximize their creativity and skills" (p. 28) of embodied expression. From this position, performance excellence, that is, creativity, regards the ability to maximize choices and actions within the constitutive constraints of a sport. While limited by the rationality-imposing constraints of competitive boxing matches where the rules only enable sub-optimal performances and 'artless choices and interaction' (p. 33), Lewandowski argued that constrained maximisation are more likely to occur during sparring, due to 1) flexible constraints, modified to foster attempts, 2) carefully selected, odd sparring partners that introduce novel constraints and 3) "shared cooperative action and practical improvisation designed to instruct one another in mutually beneficial ways" (p. 34). For example, the latter regards giving 'feedback' on mistakes "with controlled well-placed blows" (p. 34).

While the most creativity-nurturing coaching programs comprise certain kinds of *on-field* practice activities or coaching behaviour, only a single study have tested the impact of *off-field* creativity training in the development of athletes' creativity. Here,

Kováč (1998) investigated the effects of a 10-month creativity program on 17-year-old Slovakian football talents' domain-general (i.e., figural TTCT and Urban's Creativity Test, see *theme 6*) and sport-specific creativity (i.e., rated by the coaches who divided the players in three levels, based on their creative actions in matches). The program comprised verbal divergent football problems, role playing, and drawing of imagined pictures (not further specified). Compared to a control group, the program improved their flexibility (but not their fluency or originality) and the ratings of in-game creativity tended to improve.

While the above accounts focused on prolonged processes and cumulative effects (that is, treat creativity as an end, as problematised in SS1), the final theme deals with certain ways (e.g., manipulation of intra- or interpersonal variables) that can boost the chance for creative actions to occur in the concrete (training or match) situation.

5.4.12. FACILITATING CREATIVE ATTITUDES

This theme gathers qualitative (Erhardt et al., 2014; Rasmussen & Østergaard, 2016) and philosophical inquiries (Aggerholm & Ronglan, 2012; Campos, 2014; Muller, 2014), which examine creativity concerning the subject's existential attitude or orientation towards the game. Rather than manipulating task constraints (as advised by NEC scholars), but coming closer to the idea of inducing a promotion focus (as advised by the TC perspective, *chapter 4*), a common idea is that situated creative actions may be facilitated by changing the way players meet the situation, task or in-game problem.

The first philosophical account was conducted by Aggerholm and Ronglan (2012), who did an existential analysis of the role of humour in the social contexts of learning and performing in competitive invasion games. Based on Kretchmar's work, humorous attitudes and well-timed wittiness facilitate creative performances by distancing the athlete from the situation – an "abstraction from the embodied intentionality" (p. 340). This playful approach to the game allows players to discover new connections between separate elements. As a precondition to action, this "habitual relation to the world" (p. 340) entail alternative and unconventional solutions: Seeing "possibilities in the game gives the humourist a potential to make a qualitative difference by doing *something else"* (p. 341). Similar implications are found in Campos' (2014) approach (see *theme 5*). Drawing on a C. S. Peirce's work, he portrayed spontaneity an instinctive capacity for unscripted and unforeseen actions; a "specific attitude with which we may approach an activity" (p. 58) to act creatively; a fresh, lively and playful spirit manifested as "exploration of the unexplored" (p. 58) aiding improvisation when facing challenges.

Challenging the dichotomy between playing to win (i.e., performing with maximum effort to advance) and playing to play (i.e., a non-competitive orientation, focused on having fun, so no one's feelings are hurt), Muller (2014) developed the notion of *creative engagement*; an orientation to the game that forms the foundation of creating shared experiences of joy and performance excellence (see *theme 7*), which is "different from being competitively goal driven" or result oriented (p. 64). Creative engagement is achieved by enacting *patience, positivity* and *possibility*:

> […] patience creates moments and engaging in the interconnections in those moments creates positivity. The energy with which we then work is the energy of possibility […] to be at my best I need to engage in a way that does what I can to make everyone involved in the undertaking be their best. (p. 64)

From this perspective, the players are active creators of the situation and teammates as co-dependent participants. Joint accomplishment of excellence – or joyful optimal experience – stems from "creating the situation, acting with patience in creating the moment as one imbued with positivity" (i.e., not limited by negativity, although things are not going your way) and "tapping into the shared energy of possibility" (p. 66). All teammates need to align with each other in order to generate the energy of the moment, and rather than thinking or acting as if being the most vital part of the whole, each player must "accept being interconnected with others through positivity and the energy of possibility" (p. 68). Creative engagement is obstructed by merely reacting to situations, matching skills to needs and reproducing existing structures in the game. Therefore, deep knowledge about the game and oneself as a player is mandatory.

Emphasising collaborative synergies, the above come close to *CO-CREATION* (SS2). This metaphor is also evident in Erhardt et al.'s (2014) case study in a flat teamwork structure that showed how ice hockey players were responsible to solve a diversity of in-game problems with less rigid procedures and less coach oversight. As opposed to the mechanistic operations in a tall teamwork structures (see *theme 10*), the coaches delivered tacit knowledge (i.e., "hockey sense") to players by delivering dynamic game principles (e.g., "when in doubt, play simple", p. 386), covered by a short playbook for the entire season. Coming close to the coach's preferred way to apply creativity in SS3, this abstract framing of the game advanced the players' understanding of the team's playing system, facilitated experimentation and communication and the most successful players "could leverage tacit knowledge to create 'something out of nothing' in creative ways that added value to the team" (p. 390). This ability was supported by illustrative exemplification (e.g., showing great plays on videos and discussing how to solve problems, while recognising different interpretations) to developed an understanding of the game contexts where the principles could be applied. Finally, the coaches used experiential learning drills, where players were encouraged to make plays on their own and gained "experience in a variety of situations" (p. 389). The latter aspect was not seen as appropriate by the coach in SS3.

5.4.13. AUGMENTED COMPETITIVE SUCCESS

This theme covers studies arguing that various kinds of (in-game) creativity increase the likelihood of winning matches by surprising the opponents, making it difficult for opponents to predict what comes next, unbalancing the opponents' tactics, creating favourable situations, fabricating scoring opportunities, and scoring most goals or points (Bjurwill, 1993; Castañer et al., 2016; Coutinho et al., 2018; Duarte et al., 2012; Duricek, 1992; Gama, Couceiro, Dias, & Vaz, 2015; Lacerda & Mumford, 2010; Leso et al., 2017; Lucifora & Simmons, 2003; J. P. Mills, Ing, Markham, & Guppy, 2018; Rubin, 2014; Scott, Hill, & Zakus, 2014; Vestberg, Gustafson, Maurex, Ingvar, &

Petrovic, 2012; Wiemeyer, 2003). These scholars only link creativity with the offensive parts of the game.

For example, Callaghan et al. (2018) argued that if not being able to rely on greater speed or power than the opponents, the creative elements of deception or surprise is vital to be successful in team sports: "Gameplay, particularly offensive gameplay, calls for the unexpected, which means something from outside the prevailing schema, thus something which will disrupt it" (p. 46). Further, Coutinho et al. (2018) argued that tactical changes of football and other game requirements (e.g., proximity to the target area) increase the demand for attackers "with more unpredictable and creative movement patterns' and 'creative technical actions" (p. 2). Thus, creativity (i.e., measured by fluency, attempts, and versatility) was included as an outcome variable in their investigation of the effects of an enrichment program for attackers, for whom 'different and unexpected movement behaviours are desired to break the symmetry with the defenders' (p. 3).

Connecting creativity to organising players that orchestrate the team strategies, Gama et al. (2015) analysed the *small world* network interactions of professional football players from a Portuguese Premier League team. Midfielders were identified as *centroid* players, in terms of performing passes and crosses, receiving passes, and promoting interactions between other teammates. As the "connecting nodes" (p. 108), these players enhanced their team's inter-individual performance and self-organisation process, by exhibiting a higher level of passing and reception quality, "contributing to a high intensity and density of the network" (p. 109). Involving a prominent example of a current centroid player, Castañer et al. (2016) peformed a polar coordinate analysis the action sequences leading to 103 goals scored by Lionel Messi between 2004 and 2014. The analysis showed that "Messi is highly versatile in his use of motor skills and adapts the use of his lower limbs to angle his body with respect to the goal line", which requires originality and quick decisions. Also, he most often occupied the wing and midfield areas on the right side of the pitch when he moved towards the target area. Being left-footed, this afforded a better shooting angle, but also "give him room to create" (p. 8). In this regard, they initially stated that strikers are likely to be "creative agents for the team by generating original responses" (p. 2). In sum, they argued that the practical implication of their work was "the importance of positioning other attackers so that they do not occupy the spaces in which a skilled striker is particularly effective" (p. 8).

5.5. CONCLUSIVE DIFFERENCES

Summing up the state-of-the-art in the field of creativity studies in sport, this chapter provide a comprehensive and comparative overview of the wide range of assumptions, agendas, approaches and applications regarding player creativity that has been published in peer-reviewed journals in sports science during the last 30 years. The field is growing exponentially, and with few studies in each theme, the field will generally benefit from more studies since several questions deserve more attention.

The review reveals several avenues for creativity research that are not recognised by the three predominant perspectives to sporting creativity as outlined in *chapter 4*, and

perhaps not by stakeholders in sport. Based on these findings, cultivation of creative capacities in and through sport as well as facilitation of creative actions during training and matches have wider implications than increasing the players chance of solving in-game problems, surprising opponents and winning games.

Hence, the 13 themes contribute to the core ambitions of this PhD thesis in terms of nuancing the dialogue about creativity in sport and offering alternative interpretations of the benefits of nurturing creativity in sport. Yet, more research is necessary, so stakeholders become aware of the multifaceted positions and perspectives afforded by this concept – and their practical consequences.
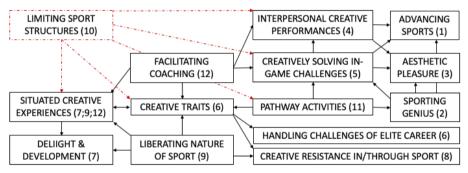
5.5.1. THE SEVEN P'S OF SPORTING CREATIVITY

As revealed by the present review, the field is marked by a variety of methodological and conceptual distinctions, indicating that the field is somewhat polarised and fragmented. Hence, the state-of-the-art may be summed up by seven P's (themes in brackets), which highlight particular research interests:
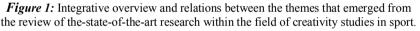
- **Promotor**; personal or environmental condition for wellbeing (7; 8; 9; 10)
- **Player**; cognitive-perceptual qualities of creative players (2; TC)
- **Person**; creative personal prerequisites for success in sport (6; CDF)
- **Progress**; creativity for the techno-tactical renewal of sports (1; 2; EC)
- **Performance**; criteria for creative match solutions (2; 3; 4; 5; TC; EC; CDF)
- **Practice**; ways to form moment environments for creativity (7; 12; EC; CDF)
- **Pathways**; developmental trajectories towards creativity (2; 11; TC; CDF)

Aiming for conceptual and analytical clarity or outlining the basis for measurement, some scholars tend to describe certain dimensions of the same phenomenon by focusing most on certain aspects (e.g., performance) while ignoring others (e.g., promotor). Without attempting to offer a complete list, the state of the field can be portrayed by dichotomies, that encapsulate central questions and discussions. These are more abstract analytical categories that was generated when making this review:

TRAITS	vs.	STATES
EXCEPTIONAL	vs.	HABITUAL
INDIVIDUAL	vs.	RELATIONAL
EFFECTS	vs.	EXPERIENCES
SUCCESSFUL	vs.	UNSETTLED
ACHIEVEMENT	vs.	POTENTIAL
PRODUCT	vs.	PROCESS
GOAL	vs.	ACTION
SPECIFIC	vs.	GENERAL
WINNING	vs.	LEARNING
OFFSENCE	vs.	EVERYWHERE
NATURE	vs.	NURTURE
INTUITIVE	vs.	PURPOSEFUL
INHERENT	vs.	TRAINABLE
FREEDOM	vs.	RULES

Based on a relational logic (Glăveanu, 2013), neither side of a dichotomy can be understood detached from the other. Thus, to avoid splitting the emerging field into numerous heterogeneous pieces and eventually ending up with a meaningless and unrecognisable phenomenon, both new and old scholars of sporting creativity should keep the whole phenomenon (and field) in sight when taking on definite perspectives or concepts, so more bridges can be built between different orientations. In this regard, a conceptual network of the field of creativity studies in sport is depicted in *figure 2*, which show suggested relations between the 13 themes that emerged from the integrative and narrative review. Each theme forms particular areas of interest, which have been used as points of departure in past studies in the field, but often to be treated in isolation. Future studies should transparently consider the interests and consequences of their scientific constructions and invite others to evaluate what their ideas help us achieve in the world. The next section highlights some of the dichotomies and relates them to this PhD thesis.

Figure 1: Integrative overview and relations between the themes that emerged from the review of the-state-of-the-art research within the field of creativity studies in sport.

5.5.2. KEY DICHOTOMIES IN THE FIELD

The first side of the dichotomy of *exceptional* enactments and *habitual* activities point to approaches where special kinds of players are creative, and others are not; ideas where the label of creativity is set aside to the most talented or technically gifted, or seen as an exceptional capacity that can only be attained once all the skills within a given sport has been mastered through sustained deliberate practice. The other side cover accounts where creativity is grasped as a habitual, ubiquitous, everyday phenomenon, fundamental to all human (inter)action. As evident in SS1, this PhD thesis addresses the latter. Also, the ideas developed in SS2 and SS3 are presented in a way that make them relevant for coaches and sport participants at all performance levels. Basically, creative actions are promoted as possibilities that are available to all players who are open to – or helped to – conceive them, willing to act on, play and experiment with them. Acting on novel affordances and solving novel challenges in the sport environment is open to everyone, even if it seems trivial for the rest of us, but some may need more help to do it than others, and others may find themselves in a context where the ability to do so is overpowered by others' control. Hence, creative experiences are not exclusive to experts and big-c contributors as held by some researchers (*theme 2*; *3*). All players could benefit from participating in creative

activities, not just those designated with a free role as a designer or magician in matches. This takes us to the next dichotomy.

Next, the ***offence-everywhere*** dichotomy refers to the questions of which kinds of situations creativity is needed, and which tactical positions are allowed to be creative. As argued in SS1 and exhibited in SS2, many match- and performance-oriented conceptions of creativity imply that only players with offensive roles are believed and allowed to be creative. As highlighted in *section 2.3.8.,* that most coaches in SS2 linked creativity with offensive actions on the last third of the pitch. This belief echoes the TC perspective (*section 4.1.*), where "creativity can only occur during offensive game situations and not in defensive situations" (Memmert et al., 2010, p. 4). Based on questionnaires and interviews, Wiemeyer (2003) showed that soccer coaches primarily see creativity was a vital feature of build-up players, who conduct and organize offensive plays. Hence, the idea that creativity only regards offensive positions seems to be an unquestioned belief in football. Yet, as revealed by several themes in this review, this is far from the case. For example, creativity is important to handle everyday challenges and career transitions (*theme 6*). Others see creativity as an inherent part of all kinds of sport participation (*theme 9*). Based on the perspective in SS1, creativity could potentially be needed in all situations, if the transactional components change, so the player cannot rely on usual actions.

In relation to the two above dichotomies, and in connection to that between ***winning*** and ***learning***, a limiting practical consequence could be that result-oriented coaches place their best players at key offensive positions and don't allow other positions to be creative. Some scholars even endorse coaches to only use creativity-enhancing coaching strategies for offensive players (e.g., Coutinho et al., 2018; Duarte et al., 2012). Similarly, based on match analysis of Lionel Messi's creative behaviour, Castañer et al. (2016) highlighted "the importance of positioning other attackers so that they do not occupy the spaces in which a skilled striker is particularly effective" (p. 8). In this regard, the assumption that all players do not need to be creative is evident in Martin and Cox's (2015) study of Steve Nash (see *theme 2* and *11*), whose creative, spontaneous, and unselfish mode of play and leadership qualities facilitated the success of his team:

> "In football, the midfielder typically is the most skilled and clever player on the team, capable of orchestrating team strategy by his control and distribution of the ball. When all else fails, his teammates return the ball to him and he takes charge. This is how Steve and his teammates played basketball" (Martin & Cox, 2015, p. 393)

Based on this, one could imagine cases where the presence of a creative player limits the creativity of the other players. Maybe the other players rely too much on the "go to guy" and always plays the ball to him, rather than trying something new on their own initiative. Or maybe the creative player is affected by his coach's result orientation and therefore avoids passing the ball to those he knows will mess up the attack. What is worse – in both examples – is that the other players are euphoric about winning the game and don't care about just having played as usual or not having touched the ball at all. Another limiting consequence might be that it is only the player who completes the difficult pass that is identified as creative. This takes us to the next dichotomy.

The dichotomy between **individual** and **relational** views highlights that some promote creativity as the individual player's ability to solve in-game (or handle everyday) problems, while others stress the dynamic interplay between teammates, opponents, and material conditions as fundamental part of the creative performances or transformative processes. Although several accounts highlight relational aspects, these are mostly situated in the course of the game (e.g., how players actions are conditioned by opponents' movements). Hence, there is a lack of research on collaborative creative processes, where participants help each other develop new ideas that can be implemented in team tactics or strategies. There is also a lack of studies of novel material conditions and task constraints in creative processes (i.e., other than common manipulations such as pitch size or number of goals). Both kinds of activities may be rare in practice. At least, only the *invention* metaphor from SS2 points to such activities, and this way to develop creative abilities was rejected in SS3. Further, the *individual-relational* dichotomy is also a question of ontology. In this regard, the perspective of SS1 is basically relational in that sport participants' inner and outer environments constitute each other. For example, the player-environment transaction is influenced by historical and cultural aspects. This means, that even when creating in isolation, our actions are still shaped by others (*section 6.1.*). This allows us to visit other's perspectives to be inspired (Glăveanu, 2016).

The next dichotomy discussed is that between **successful** and **unsettled** actions. In this regard, SS2 shows that some coaches accentuate the aspect of appropriateness in the bipartite definition of creativity (i.e. *originality* and *effectiveness*, Runco & Jaeger 2012). A similar issue appeared in SS3, where Adam e.g., preferred to work with match-relevant actions. Both aspects could limit the range of action possibilities explored. Also, although "creative inconclusiveness" plays a central role in the "effective education in creativity" (Corazza, 2016, p. 258), the bearings of ineffective novelty (e.g. making mistakes when trying unperceived actions; doing unusual, non-transferable actions) are rarely enunciated in contemporary research on sporting creativity. Doing so, e.g., by paying more attention to potentially original and effective ideas (Corazza, 2016), would recognize the dynamic interplay between agent and environment during creative processes. Still, such aspects are rarely recommended in the literature. Campos (2014) even state that

> "creative attempts are for the sake of solving movement problems or sporting challenges effectively […] ineffective selfishness in the context of team play or innovations that complicate what can be solved in more simple ways […] do not constitute effective creativity." (p. 72)

As an exception, Santos et al. (2016) encourage efforts "to perform different actions even non-effective movements" (p. 3), but this is delivered as a step towards efficient creativity at later stages – not for the developmental yielding of subjectively creative experiences, developing creative abilities, reducing the fear of mistakes, or lessening the frustration that often entails mistakes. While Santos et al. (2016) indorse attempts for novice players, Hopsicker (2011) argue that that only well-prepared athletes (i.e. with years of deliberate practice) eventually begins to adopt a risk-taking attitude and becomes willing to make mistakes when solving challenges which mark "the turning point" in the development of 'the creative sport genius' (p. 118). As a combination of

the two, and supported by the metaphors of *exploration* and *individuality*, SS1 sustains that all players may benefit from experimenting with unattempted, unexploited, unperceived, and uninvented affordances in different situations, and this process inevitably involve mistakes and inefficient actions.

This takes us to dichotomy between the objective ***effects*** of creative performances and the subjective ***experiences*** of creative (inter)actions, activities and processes. While the benefits, outcomes or functions of being creative is rarely studied or emphasised in the general creativity literature (Forgeard & Kaufman, 2016; Moran, 2010), this was often clarified in the studies in the present review – or at least, apparent when analysing them. Most often, however, creativity served certain in-game, result-oriented functions (1; 2; 3; 4; 5; 6; 11; 12; 13). Seldomly, creativity served the function of enhancing player wellbeing and development or improving the everyday life of sport participants, e.g., through joyful activities, or gaining creative control over their life (7; 8; 9). Consequently, most accounts of creativity in sports are based on sport-specific ideals and interests, rather than broader purposes and values. This reflects a tendency in the general literature, where creativity is often treated as the dependent rather than the independent variable (Kaufman, 2018), that is, an output rather than input in undertakings to achieve other desired outcomes. With the exceptions of Rasmussen and Østergaard (2016), no qualitative (or quantitative) studies have empirically explored or exposed promotion of creativity as a psychosocial feature of enjoyment, engagement and/or player development. While SS2 offers novel insights about practitioners' perspectives on these latter aspects, the remaining studies of *theme 7* are merely based on philosophical conceptualisations (i.e., also the case for SS1). In this regard, a central outcome of this review is that there is a lack of studies on sport participants' experiences of creative actions, processes and achievements. Since I focused on coaches in this PhD, this is something that I do in my future research (*section 7.5.*).

The last dichotomy considered here is the difference between seeing the development of creativity as ***nature*** or ***nurture***. While some studies consider creativity to be an inevitable outcome of sport (i.e., seen as creative playgrounds without limits), others highlight the role of the coach in establishing a creativity-nurturing environment. Based on the present review, is questionable whether all kinds of sport participation – especially those kinds organised by coaches – naturally entail creative challenges and experiences and thereby develop creative abilities. Several studies indicate that diversification and deliberate play are most likely to develop creative abilities, but there is a need for more knowledge about the specific kinds of structured and unstructured activities that cultivate creativity (*section 4.5.*). Based on finding that athletes with the highest scores on a test of everyday creativity had engaged in different recreational sports instead of specializing (*theme 10*), Richard et al. (2017) argued that "sport organizations should encourage young athletes to sample many sport activities, not only to promote their athletic success, but also to help these athletes develop useful life skills such as creativity" (p. 73). However, based on SS1, SS2 and SS3, this depend on the capacity of coaches to design creativity-challenging exercises and/or a creativity-nurturing environment – sampling do not necessarily entail more creative activities and experiences and do not explicitly target creative

abilities. Rather than expecting creative action to occur naturally, the coach has an active role in shaping possibilities for creative sport experiences and creative outcomes. Thus, I argue that sport organizations should also invest in improving the coaching quality of their own sport. Further, this would reduce the risk of limiting creativity after the athletes specialize.

5.5.3. ADDITIONAL SUPPORT

The preparatory searches outlined in *appendix A* confirmed that no literature reviews had been published regarding the topic of player creativity in sporting activity. However, shortly after completing the analysis and writing up the present themes (after publication of SS1, after submitting SS2, but before submitting SS3), Fardilha & Allen (2019) published a systematic narrative review, which focused on the definition, assessment, correlates and development of creativity in sport. Despite different inclusion criteria (e.g., invasion and court-divided games only), findings support the present review and the directions for future research in *section 4.5.*

Fardilha and Allen (2019) showed that most research "has employed quantitative and experimental or quasi-experimental design" (p. 19). Hence, in support of SS2 and SS3, they argue that qualitative strategies are needed to study creativity in situ, preferably involving the perspectives of sport practitioners "in all stages of the research process" (p. 19). They also call for more in-depth portrayals of the tasks executed in creativity programs, to more accurately categorise constituents of deliberate practice and play since these concepts are depicted too broadly in extant research (Fardilha & Allen, 2019).

In support of SS3, they conclude that there is evidence for the trainability of creativity, but that more research needed to support single strategies and clarify which of their features are responsible for developing sporting creativity and why. Finally, the overrepresentation of cognitive definitions, conceptualizations and assessments calls for more ecologically valid research. Therefore, creativity definitions should both consider attacking and defensive parts of the game and the interdependence between attackers and defenders (Fardilha & Allen, 2019). Although it leaks a preference for in-game creativity, I do agree with the latter request in that all players could benefit from being creativity.

5.5.4. NAVIGATING PERSPECTIVES

Stressing the importance of being able to navigate between a diversity of perspectives regarding creativity, Cacchiarelli (2018) recently argued that creative performances in sport are whatever action someone recognise as creative. From a linguistic perspective, the meaning of creativity depends on a range of individual, social and cultural aspects. Since the concept is changeable and uncertain the same action could be regarded either as foolish, normal or creative in three different historical periods, three different contexts, and by three different people from the same period or place. In this regard, Cacchiarelli listed a set of laissez-passers, or permits, that allow people to acknowledge particular in-game actions as creative: Reflecting the results of the present review, these included the permits of the *genius, stereotype, definition, context* and *media*.

For example, people who recognise athletes as creative geniuses (*theme 2*) will often see their actions as creative although they are "doing nothing so special to deserve it" (p. 11). Similarly, stereotypical ideas about the abilities of creative athletes (e.g., *theme 2; 4; 5*) may lead us to label any act as creative when minimal criteria are satisfied (e.g., a scoring opportunity created; a deked opponent) – ignoring its validity. Also, when presented with a definition that lists some specific characteristics of creativity (e.g., *theme 3; 5; 6*), people become more inclined to observe these traits in any given player's actions. Finally, these aspects depend on whether the action is done in a high or low performance context and may be highly influenced by what the media has established to be creative (Cacchiarelli, 2018). Together, these permits "indicate that creativity is a concept which naturally slips away from any form of definition or categorization" (p. 11). In my view, some of them may also influence the way coaches conceive and apply creativity.

Finally, Cacchiarelli's study – as well as the findings of the present review – highlight the importance of critically reflecting on one's beliefs and assumptions about creativity and underline the significance of our exploration of football coaches' perspectives in SS2. There are two key reasons for this. First, because it exposed cultural blind spots, that is, perspectives that the football coaches were more or less unaware of. Second, because it revealed ideas about creativity than are not covered by the review, but bear the potential to be used to form new or elaborate on extant explicit perspectives.

CHAPTER 6. METHODOLOGICAL CONSIDERATIONS

In this chapter, I outline a range of research principles, quality criteria, and ethical principles that guided my work in relation to the sub-studies and reflect on some methodological and processual obstacles encountered in this regard.

6.1. RESEARCH PRINCIPES

Situated in the WE-paradigm (*section 1.4.* and *2.2.2.*), this PhD thesis draws on Glăveanu's (2010b) principles for doing theoretical and empirical research based on a socio-cultural psychology of creativity, which "stresses the fact that creativity is relational in nature and is born of intersubjectivity of explicit and implicit connections between an individual or collective creator and others (both from the same and different communities)" (p. 152). This position allied with the philosophical tradition of pragmatism (*chapter 3*) and aided me when evaluating extant research on sporting creativity (*chapter 4* and *chapter 5*). The principles are intended as open guidelines, not absolute criteria.

Contextualized understanding: The act of situating creativity, so it is clear whom a concrete action or a product is novel and useful for. Material and conceptual products can only be considered as new and meaningful in relation to a certain actor, group or domain, at a certain time. The meaning of a new artefact is context-dependent. Hence, there is no objective creativity, but only one that is constructed within communities, in relation to actors, actions and/or artefacts (Glăveanu, 2010b). In SS1, creativity is important for the actor in situations where usual actions are insufficient. Further, this principle is one of the reasons why I included quite elaborate contextual descriptions in SS2 and SS3.

Generative understanding. Creativity do not emerge from nowhere, but is constituted by the available cultural repertoire of resources, that is affordances of objects, scripts, values, symbols, representations and language. Our experiences and particular social environments make us distinctive actors in creative activities, and therefore our capacity to amend the cultural influences may vary. This principle reflects the frameworks chosen and models developed in SS1.

Meaning-oriented understanding. Creative products cannot be evaluated by external experts. Thus, a creative action or artefact should primarily be assessed by considering the actor's perspective as well as significant others affected by the particular creation. Moreover, special attention should be given to cultural differences in the conception, justification and legitimization of creativity, in terms of the varied ways in which not only individuals, but also societies, attach meaning to creativity, e.g., how it is defined, treated, explained (Glăveanu, 2010b). This principle supported my interest in studying football coaches' diverse conceptions of creativity in SS2.

Genetic understanding. Cultural accounts should address the problem of 'geneses', that is, "the birth and development of creativity" (p. 154). From infancy, our lives as cultural beings are intertwined with the potential space between self and other, the flexible and variable third space between creator and community (e.g., child and mother; player and environment), which opens up for playing and creating and thereby understanding and manipulating the world in novel ways (Glăveanu, 2010b). This

premise is captured by the transactional premise in SS1, and signify the idea that everyone can be creative.

Ecological understanding. Aiming to reach an in-depth situated understanding of creative actions, a cultural psychology recommends qualitative methods, such as case studies and interviews that can generate a rigorous understanding of personal circumstances as well as social and historical features that influence the creative act under scrutiny. Also, studying creativity with artificial tasks and settings (e.g., to identify inner personality traits) should be avoided since it deprives the informal, playful, spontaneous and contextual qualities of creativity. This principle facilitated my methodological considerations and choices in SS2 and SS3.

Together with the conceptualization of SS1 and the pragmatist perspective on creative actions (*section 3.6.*), these principles serve what Levitt et al. (2017) described as *fidelity to the subject matter*, that is, a process where the researcher acquires and preserves a commitment to the studied phenomenon as it is understood in the particular research paradigm. Hence, this is one of the quality markers utilized in the present PhD thesis.

6.2. MARKERS OF QUALITY

Judging the quality of qualitative research based on universal criteria may counteract the desire for innovative, diversifying, appealing and valuable sport studies that make a difference in peoples' lives and in society (Schinke et al., 2013; Smith & McGannon, 2018). Further, in a complex, changeable and contingent world made up by subjective realities (cf. *section 3.1.*), it does not make sense to apply criteriological approaches where an entire set of criteria should be accomplished to achieve rigor. From a pragmatist position, we cannot access an objective reality by means of neutral methods, since the use of methods always is affected by the researchers' experience. Moreover, pragmatism is interested in lived reality and how it impacts people's actions and interactions. Hence, the representation of the reality is always situated, positioned and informed by the researchers' assumptions and commitments (which should therefore be transparent).

The pragmatist core of this thesis necessitates a relativist, non-foundational approach to ensuring research quality, where criteria are viewed as socially constructed qualities and chosen from open-ended lists rather than a set of static standards (Smith & McGannon, 2018). In this regard, the pragmatist basis also required that the chosen methods did not prescribe "correct" and "accurate" ways to enact them, but allows the researcher flexibly and purposefully adapt the method to the purpose, e.g., to reflexively engage with the production and analysis of data. This flexibility is also vital since the methods, analysis and data representation in qualitative studies should reflect the "unique richness of local practices" (Schinke et al., p. 463).

From a pragmatist perspective, indicators of quality should only be used if they serve a purpose. In the following sections, I describe the main quality criteria considered during my PhD studies, which are 1) worthy topic, 2) coherence, 3) transparency, 4) credibility and 5) naturalistic generalization. More specific aspects are found in the substudies, and e.g., highlighted in connection to pragmatist principles in *chapter 3*.

6.2.1. WORTHY TOPIC

Advocates of qualitative approaches highlight worthiness of the research topic as a marker of quality (Smith & Caddick, 2012; Smith & McGannon, 2018; Tracy, 2010). With its emphasis on stimulating future actions and developing communities of critical inquirers, worthwhile purposes (and the production of worthwhile artefacts that can be contextually adjusted) are at the heart of pragmatism (*section 3.5*).

In relation to choosing the worthy topic of creativity, my PhD studies were also based on considerations regarding how to produce *substantive* (Smith & Caddick, 2012) or *significant* (Tracy, 2010) *contributions* in conceptual, methodological, and practical terms (as indicated in *chapter 4* and *chapter 5,* and further outlined in *chapter 7*). Further, both Tracy (2010) and Smith and Caddick (2012) highlight Laurel Richardson's argument that research should contribute to the way we understand social life in a particular context, which can be achieved by conceptual frameworks that grasp social life in novel ways (SS1), framing problems in new ways (SS1), offering practical tools that facilitate untraditional forms of life (SS1, SS2, SS3), and gaining empirical insights (SS1, SS2, SS3). I also aimed to contribute with *heuristic significance* (Tracy, 2010), that is, to develop curiosity, inspire novel discoveries and move others to explore or act on the results in the future. This echoes naturalistic generalization as described in *section 6.2.5.*

In terms of practical significance, Smith and Caddick (2012) highlight *catalytic* and *tactical authenticity*, which refer to a study's ability to enhance awareness and catalyse action among the participants, and if desired, tactical involvement of the researcher in developing their abilities. Moreover, worthwhile research is not only relevant and timely, but surprising and counterintuitive, disturbs common-sense practices, challenges well-accepted ideas, or questions taken-for-granted beliefs (Tracy, 2010, p. 840). The latter aspects resemble the emancipative desires of pragmatism, which seeks to uncover and challenge dogmatic traditions and thereby advance human conditions (*section 3.5.*). Accordingly, qualitative research should be in service of practice and therefore its quality is principally evaluated by considering its utility in terms of making sense for and improving local communities.

From a pragmatist perspective, the choice of methods (and knowledge generated) should mainly be judged in terms of how well they serve particular interests – not unconditionally in relation to rigid hierarchy of evidence. Hence, research processes and their outputs should be evaluated in relation to their "useful consequences for the user's desired action. As stressed in *section 3.5.,* the criterion of usefulness is then tempered by the critical analysis of which interests are being served by that action" (Cornish & Gillespie, 2009, p. 807). Among others, "action" both regards the researcher's choice and application of methods, and other researchers' – or especially practitioners' – use of the results or conceptual framework offered.

6.2.2. COHERENCE

With a relativist approach, researchers should ensure that the study is epistemologically and ontologically cohesive (Smith & McGannon, 2018). Thus, I

emphasized clarifying the pragmatist position in the three sub-studies, so readers and reviewers were enabled to make appropriate appraisals about the research quality.

Further, *coherence* regards a study's internal consistency (Tanggaard & Brinkmann, 2015). For example, the theme, problem, theory, methodological choices and results should form a "coherent whole" (p. 526). Coherence also regards whether the operationalisation of methods relates to the purpose (e.g., interview guide in *appendix B*). Further, for pragmatists, the research question guides the choice and application of methods (Onwuegbuzie & Leech, 2005). Hence, the markers of quality depend on the particular intent, purpose, duration and context of the given study, and the question of validity regards whether the choice and application of tools fits the question.

Coherence also concerns presenting one's research material in an integrated manner, while maintaining nuances (Tanggaard & Brinkmann, 2015). For example, the analytical themes should gather the material but simultaneously open up for deviating aspects. This kind of coherence is also emphasised as a quality marker by Smith and Caddick (2012). Hence, during the analytic processes in SS2 and SS3, I made a great effort to ensure that the different themes created a comprehensive, meaningful picture of the data material. For example, in SS3 it was important to both include potentials and obstacles to not only focus on the positive or negative aspects of the AR process. Also, I was careful not to narrow down too much the amount of analytical categories to reduce complexity.

When it comes to the quality of the analysis and proposed interpretations in SS2 and SS3, I also based my work on the notion of *width*, which was highlighted by Smith and Caddick (2012) as the "comprehensiveness of evidence" (p. 70) and inter alia regards offering numerous quotations in the report so the reader is supported in judging interpretations. Hence, the examples for each metaphor in *section 2.3.7.* enhance width. In Tanggaard and Brinkmann's (2015) words, "the researcher anchors data in examples" (p. 525), which both illustrates the analytic process and insight. In this regard, I both used data extracts in illustrative (i.e., highlighted example of the analytic claim) and analytical (i.e., discussing specific features within the main text) ways (Braun, Clarke, & Weate, 2016, 201).

6.2.3. TRANSPARENCY

Qualitative researchers should clearly describe their studies to help readers see through their assumptions, design, methods, analysis and results and judge their sense and merit (Tanggaard & Brinkmann, 2015). In order to enhance *transparency*, interview questions and an overview of analytic themes are added as appendices to this PhD thesis, and more can be requisitioned (e.g., interview transcripts in Danish; specific interview guides; overview of AR design meetings). Following Tracy (2010), transparency was enhanced by being honest about all stages of the research process from e.g., choices, activities and challenges. This also enhanced *sincerity*, a study's genuineness and authenticity (Tracy, 2010). In relation to transparency, *specifying one's perspective* by openly confessing one's assumptions, interests and values will help the reader interpret and understand the data (Tanggaard & Brinkmann, 2015). For example, as exposed in *chapter 1,* my values and assumptions about creativity had a great impact on the nature of the potentials and obstacles encountered in SS3.

Hence, transparency serves much more than the purpose of replicability – it helps others understand the limitations and strengths of the study.

In relation to SS3, Cook (2009) argued that the adoption of new approaches is not a smooth, one-directional process since it disturbs practitioners' ways of seeing and knowing. Thus, the 'messy areas' of action research should not be concealed since it creates depth and rigor, in terms of transparency, honesty, resonance and helps us understand the drivers and inhibitors of change in thinking and action (Cook, 2009). As argued by Reason (2006), the awareness and transparency about the choices made at the various steps of any AR project define its quality. In this regard, quality in AR rests "on stimulating open discussion" (p. 199) about the choices made: "to offer our choices to our own scrutiny, to the mutual scrutiny of our co-researchers, to the wider community of inquirers, and to the interested public at large" (p. 199).

6.2.4. CREDIBILITY

Credibility regards the production of trustworthy results and regards spending ample time with participants to avoiding sought interpretations (Smith & Caddick, 2012). Hence, it is not about testing the results or reducing the effect of the researcher's experience to reach theory-free knowledge (i.e., eliminate the bias of subjectivity), but about producing persuasive accounts of individual realities, so readers get a sense that it is "trustworthy enough to act on" (Tracy, 2010, p. 843). Among more, this may be achieved by means of *thick description*, that is, expansive, detailed and in-depth illumination of situated meanings without divorcing examples from context. Showing what happened rather than telling exactly what to think allows readers to make their own conclusions (Tracy, 2010).

Resembling pragmatist pluralism (*section 3.4.*), credibility may be enhanced by *multivocality*, which regards reflecting the lived experiences of several participants, embracing a variety of viewpoints, and drawing attention to cultural differences, e.g., between researcher and participant (Tracy, 2010). Moreover, credibility is enhanced by the use of more than one participant, interpreter, theory and method. Rather than triangulation, which primarily aims to improve accuracy, this aspect draws on the notion of *crystallization* which regards appreciating the complex and unstable world (Richardson & St. Pierre, 2005), and thereby exposing different perspectives and different aspects of problems.

Pragmatist research is time and context bound and cannot be verified in the sense of treating results as independent truths that can be confirmed by revisiting participants or contexts, e.g., through member checking, as criticized by Smith & McGannon (2018). Instead, member reflections were employed in SS2 to open dialogue about the results to gain more insights and explore and acknowledge gaps and contradictions in the data, thus simultaneously enriching the participants' perspectives. Also, "member reflections are less a test of research findings as they are an opportunity for *collaboration* and reflexive *elaboration*" (Tracy, 2010, p. 844, emphasis in original).

6.2.5. NATURALISTIC GENERALIZATION

As highlighted by Smith and Caddick (2012), *naturalistic generalization* regards presenting personal experiences in a way that moves readers since they are able to empathize with these experiences. This can be enhanced by thick descriptions, as outlined above, so the reader is able to connect the results to their own situation. Synthetizing several of the above notions of quality, naturalistic generalization is also considered as "producing qualitative work that resonates with, provokes action in, or stimulates curiosity among readers" (Smith & Caddick, 2012, p. 69). Here, *resonance* refers to research practices that "promote empathy, identification, and reverberation" and thereby add value across contexts and situations (Tracy, 2010, p. 844). As Smith (2018) clearly state it, naturalistic generalization occur "when the research resonates with the reader's personal engagement in life's affairs or vicarious, often tacit, experiences" (p. 140). Hence, when a coach or player encounters SS2 and SS3, the metaphors or potentials/obstacles may reverberate with their personal experiences in sports, and make them feel as if the results are about them or resembles persons, events or settings they have witnessed or heard about.

As a means of achieving naturalistic generalization (and credibility), and related to making thick descriptions, Tanggaard and Brinkmann (2015) point researchers to the quality marker of *situating one's participants*. Besides arguing for the participant selection (e.g., who, how many and how access was gained), this regards carefully describing them and their circumstances of life (e.g., including the context of interviews and observations) in order to help the readers to consider the relevance for their own circumstances. This echoes Smith's (2018) suggestion that naturalistic generalization is enabled by providing an ample amount of quotations, contextual descriptions and "richly layered theoretical expressions of a reality to help readers reflect upon these" (p. 140). Further, as argued by Tracy (2010), naturalistic generalizations make readers base their choices on their "intuitive understanding of the scene, rather than feeling as though the research report is instructing them what to do" (p. 846). Hence, exposed to SS2 and SS3, readers may reflect on the role of creativity in their own club or culture.

In SS3, I used the notion of *transcontextual credibility* which implies that the transferability from one context to others relies on understanding the contextual factors in the situation in which the inquiry took place and assessing whether it has enough structures and processes in common with the context where the knowledge is meant to be applied. To clarify, this was meant to refer to the notion of *transferability* which occur when persons or groups consider to adopt something from another context because they "believe the research overlaps with their own situation and/or they can intuitively transfer the findings to their own action" (Smith, 2018, p. 141). Based on the pragmatist assumption that reality is subjective and continuously moulded by the dynamic transaction, this differs from the view that knowledge is theory-free and can be directly transferred based on "the degree of congruence between sending and receiving context" (Smith, 2018, p. 140).

6.3. ETHICS

Since persons and groups being moved by basing their action on research should be able to rely on the results, several of the above markers of quality (e.g., credibility, coherence and transparency), relates to the ethical aspects of qualitative research (Brinkmann, 2015). In this regard, ethical problems are evaded by reflexive awareness of one's assumptions and values as a researcher and clarifying how they affect one's actions and interpretations.

Resonating with pragmatism, and the perspective taken on creativity in this PhD thesis, the traditional ethical principle of *universal utilitarianism* regards doing research that may produce outcomes entailing "the greatest good for the greatest number" of people (Palmer, 2016, p. 317). Further, reflecting the focus on a worthy topic (*section 6.2.1.*), my pragmatist position is ethically grounded in that it highlights the need to challenge traditional mechanical and dogmatic practices that may limit creativity, growth and flourishing of individuals and communities, and the need to project future actions that may enhance such aspects (*section 3.5.*), which work as a moral compass for pragmatist research. Therefore, in the design stages of the three sub-studies, I considered how the given study potentially could entail improved human conditions. Among more, these aspects are part of the introductions and conclusive remarks in SS2 and SS3. In this regard, it would be unethical to prescribe exactly what coaches should do to promote creativity, thus disrespecting their circumstances. Instead, the idea was to form adaptable principles and examples, that could guide rather than dictate actions. Also, the results are intended to may nuance dialogues about creativity in sport, and to highlight potential consequences of different perspectives and approaches.

Drawing on Brinkmann (2015), the above could primarily be regarded as *macroethics*, that is, the wider interests served and considerations about how knowledge may spread in the wider society and affect communities and individuals when published. I return to this issue after outlining the *microethics* of this PhD thesis, that is, more specific considerations regarding the participants and our relationship in the research situation.

6.3.1. PROCEDURAL ETHICS

Procedural ethics regards ethical actions necessitated by governing organs such as doing no harm, avoiding fabrication and negotiating informed consent (Tracy, 2010). Since Danish qualitative researchers are deemed capable to make ethical judgments at all steps before, during and after their value-laden activities in the field (Brinkman, 2015), and since the sub-studies did not involve confidential material (e.g., health-related, ethnical, religious or sexual issues), they have not been submitted to or evaluated by national or institutional research ethics committees (i.e., only mandatory for studies involving human biological material or clinical treatments). However, I did apply ethical guidelines.

All coaches voluntarily participated in the sub-studies, and informed content was gained from all (direct and indirect) participants. In SS2, the coaches' consent was recorded on a Dictaphone after I informed them about the purpose and potential consequences of the study, reaffirmed that they participated willingly, were not forced

to answer questions, and had the right to withdraw at any time. Further, after I ensured that their names would not appear in any part of the research material, all coaches approved that the name of the club would be used in the dissemination of the results. Reducing the need for gaining the informed consent from the players in SS2, I was not seeking personal information during the observed training and it could be argued that it occurred in the public domain.

This was also the case in SS3, but since the AR process affected the content of the training sessions and was video-recorded, an e-mail was sent to all the players' parents to inform about myself and the aims, methods and intended outcomes of the research, including potential benefits and risks. The content of these e-mails will be provided upon request. Also, the players were informed in the beginning of the first training session of the AR process, where I spend considerable time clarifying who I was, why I was filming (i.e., to analyse Adam's coaching activities and that the video was only used in the analysis), and how I collaborated with Adam to develop new exercises. Adam's consent was gained at the start-up meeting, where the AR process was outlined and the first potentials were envisioned. Also, after reviewing the results, he agreed to have his identity disclosed. His readiness not to be anonymized was fortunate since removing coach characteristics from SS3 would have weakened the analysis greatly and e.g., reduced the resonance.

6.3.2. SITUATIONAL AND RELATIONAL ETHICS

Situational ethics regards ethical practices emerging from considering specific contextual circumstances and from reflecting on whether the "means justify the ends", that is, the appropriateness of exposing certain methods and data (Tracy, 2010, p. 847). Brinkmann and Kvale (2005) argued that ethics regards seeing and judging particulars to be morally proficient in the concrete research situation. Accordingly, focus should be on how ethical principles are applied in the situation rather than merely following formal guidelines. For example, Brinkmann and Kvale (2005) argue that *ethical objectivity* regards "letting the objects object to what we as researchers do to them and say about them" (p. 170). Hence, the participants should be allowed to "frustrate one's investigations" (p. 170). Among more, this was done in SS3, where the AR did not necessarily aim for agreement, but to explore possibilities and limitations of creativity and thereby uncover assumptions. Also, talking about creativity was not expected to install any undesired changes in the coaches' practices or self-perception and my questions did not challenge their views.

According to Tracy (2010), *relational ethics* "involve an ethical self-consciousness in which researchers are mindful of their character, actions, and consequences on others" (p. 847). When interacting with participants in SS2 and SS3, I focused on treating others as I prefer to be treated myself, and with respect for interactional routines in the context. Hence, I acted with honesty, integrity, responsibility, clear intent and with respect for those around me. Specifically, in SS3 this regarded taking the role a friendly outsider (see *section 2.4.2.*). Also, in SS2, ethical considerations to avoid deception and keeping the door open for follow-ups were part of the reason for conducting interviews before observations (*section 2.3.3.*). One could argue that it was unethical not to inform about the topic of creativity beforehand. However, this

would eliminate spontaneity in the conversation and involve the risk that the meaning of creativity had been negotiated. Instead, each interview was ended with a through debriefing (Brinkmann, 2015).

6.3.3. EXITING ETHICS

Exiting ethics regards how the scene is left and how the research is shared, which may both have consequences for one's participants and the wider society (Tracy, 2010). In terms of preventing bad microethical consequences, I carefully followed the principle that the participants should be able to read the paper without feeling misused, misunderstood, tricked or overanalysed when writing up the manuscripts. Hence, to prevent ethical problems, I wanted to authentically represent participant voices (Palmer, 2016) through contextualized and temporalized thick descriptions (Brinkmann & Kvale, 2005), and to transparently describe how my perspective and values affected the results (especially in SS3), while opening up for different interpretations of the results (Brinkmann, 2015), so participants are enabled to judge the work. Also, in SS2, it was important that the coaches did not feel like others could identify them directly from quotes, since we agreed on anonymity. Here, caring for the single coach was more important than exciting results.

In this regard, besides expanding the metaphorical analysis through member reflections, the act of taking the results back to the participants before submission of SS2 was based on ethical considerations. Not to withdraw my ethical responsibility for the analysis upon acceptance or to verify the results, but to promote mutual respect and deal with the risk to breach confidentiality through deductive disclosure (Smith & McGannon, 2018). This was a good opportunity to help coaches understand qualitative research, e.g., how the of results are context, time and mind-dependent. Thus, as advised by Smith and McGannon (2018), member reflections were used as "a practical opportunity to acknowledge and/or explore with participants the existence of contradictions and differences in knowing" (p. 108). Also, it enabled me to give something back to the coaches who had helped me in the interviews. In this regard, an additional seminar on creativity and its application in football was also held in the club (after the AR process).

Sharing experiences and exploring findings (e.g., for gaps or similarities in interpretations) through member reflections can reduce ethical problems such as perceptions "that the researcher has unfairly used their power to expose vulnerabilities" (Smith & McGannon, 2018, p. 108). Hence, to preserve Adam's dignity when reviewing the draft for SS3, he had the possibility to object if the results did not reflect his experience. However, he felt that it represented his views and ideas in appropriate ways, and expressed that the coach description "sounds like me". He did not disagree with the findings and they did not hurt his feelings, so he opted for the possibility to be named. If not agreeing with the findings, I planned to engage in dialogue with Adam whether this disagreement could be disclosed in the final version of the paper. In this regard, ethical problems may have been evaded in both SS2 and SS3 since both incorporate differential interpretations of creativity.

In terms of macroethical consequences, it is important to consider whether governing bodies of sport, unions, leaders, coaches, etc. could apply the results in unjust,

unintended or inappropriate ways, and since these often arise in unexpected and uncontrollable ways, one should consider how to prevent this (Brinkmann, 2015; Tracy, 2010). Other than not acting on the results at all, some might choose to use a single metaphor from SS2 to confirm their preferred view about creativity, and others may choose not to work with creativity due to the complexity of the concept and the difficulties of working with it in practice. In the final parts of SS2, I stressed the importance all metaphors to prevent such cases. Also, to avoid misuse of the sub-studies, I focused on clarifying their intended use, but without closing down other ways to apply the results.

6.4. OBSTACLES

In the following sections, I outline some methodological and processual issues, regrets and limitations of doing the research connected to this PhD thesis.

6.4.1. TIME ISSUES

With the tasks of producing three sub-studies, keeping in track with an emerging research field, undertaking additional teaching activities, producing four "spare time" chapters, presenting my work at local, national and international conferences and seminars, doing knowledge dissemination activities in various contexts (e.g., presentation at a symposium for more than 100 elite handball practitioners), visiting abroad research institutions, and completing funds applications to survive in academic life and prolong my research career, it has often been difficult to maintain a healthy work-life balance and to care for myself and my relations, e.g., reducing my family time and sacrificing my own sport participation.

Earlier this year, I was not even sure to get my position as a scientific assistant extended for the final six months of my enrolment in the PhD school, due to the bad economic situation for Danish Universities. Fortunately, and especially thanks to my colleagues, but also my previous scientific publications, abundant teaching activities and successful funds application, a solution was found at the last minute.

This focus on surviving does not mean that I did not thrive in my scholastic endeavours. Basically, the privilege of working with a self-chosen research area and being part of a young, sprouting research group with colleagues who did all they could to keep me around (without enhancing the number of tasks landing on my desk) was what kept me going. Further, colleagues in a somewhat similar situation acted as sounding boards with whom to share frustrations and thereby creating a feeling of being in it together.

As seen in *appendix D*, that is, my time schedule after having worked on the PhD for 11 months, the final period of my studies appeared to be much less busy than the first part. What this GANNT scheme does not include is the additional work I undertook after this point in time (e.g., working on a book on creativity training, writing book chapters, and saying yes to much teaching), which prolonged the project for approximately a year.

While some of the extra tasks have been my own choices, others were enforced by the system. Nevertheless, the time pressure and multiple deadlines not only made it hard

to be creative (Amabile, 2013; Byrge & Hansen, 2013), but may also have affected the quality of the sub-studies. For example, in SS3, I faced aversion to change before we even started the AR process. Since the U17 team combined adolescents from two years (2000 and 2001) who had not been on the same team before, Adam requested that the season start-up needed to be hierarchically sedimented – the players had to "learn their role and become comfortable with each other". Consequently, eight weeks passed from the intro meeting (07/21) to the first design meeting (09/13), and then three more weeks passed before the first practical experiment (10/06). At that time, I accepted these delays due to a heavy teaching schedule and conference attendances, instead of arguing that is was a good time to start since creative activities may help establish a safe training environment (Rasmussen & Østergaard, 2016). As things turned out, the offseason could have been a fruitful period to try new things and potentially prevent some of the obstacles encountered when the tournament started.

Looking back, I might have had more time to reflect between AR cycles and thus be able to prepare better for each design meeting if not simultaneously teaching a lot, writing a draft for SS1 (i.e., submitted three months after the AR process ended) and preparing for a conference based on SS2. Also, if working with the principles of task focus and parallel thinking, that is, 'one task, one deadline', the outcome might have been more creative (Hansen & Byrge, 2013). In order to stay involved with the field and have enough time left after completing data production, I had to start the AR right after the interviews and observations of SS2 (at that time, I expected to finish my PhD in November 2018).

In this regard, the most rigorous part of reviewing the predominant perspectives (*chapter 4*) and the state-of-the-art (*chapter 5*) were done after completing the AR and submitting SS2. One the one hand, this made it easier not to be affected by explicit theories when doing this analysis in SS2, enabling me to carefully ground the metaphors on the participants' perspectives, rather than looking for distinct kinds of creativity. On the other hand, an expanded horizon of possibility could have been profitable when experimenting with different kinds of creativity (and their usefulness) during the AR.

Despite the abovementioned challenges, the temporal overlap between the sub-studies may also have benefitted the outcomes of this PhD thesis. This is elaborated next.

6.4.2. CHANGING PURPOSES

The lack of time in the final period of my PhD studies has not been aided by my, at times, large resistance towards complexity and ambiguity (or perhaps incapability to make a final decision), which meant that the scope and direction of this PhD thesis was continuously adapted and refined. For example, I recurrently faced the issue of needing to narrowing the scope of my papers, where I tended to be wanting to address too much at once. Still, I see these issues as obstacles that I needed to get over in my creative process. The final products of my PhD studies would not have been the same without these stepping stones, where many ideas were explored and sorted, investing in some, deselecting others.

Thus, although it may have prolonged the process, I am grateful that my supervisors did not give me *the* right answer, but asked questions, pointed me in various directions and let me discover appropriate solutions on my own. In the following paragraphs, I provide some insight in the development of the sub-studies.

This PhD thesis was emergent in the sense that the questions asked and purposes served changed as I progressed and made more choices which then resulted in other changes to maintain the continuity of the three sub-studies. While SS1 and SS3 changed substantially during their interrelated research processes, SS2 remained its focus on exploring "how creativity is perceived and deployed in the practice field of youth elite football", as stated in my research plan submitted to the PhD school after two months (2-month plan). Yet, as described later, the results of SS2 both affected the content of SS1 and SS3. Initially, SS3 was intended to use action research to develop "a concept for nurturing the players' creativity" as well as to use various qualitative methods to understand the player's "learning outcomes" (2-month plan). Back then, the RQ for SS3 in was as follows:

> How are the practices of youth elite football modified to help the players' express their creativity and what does these changes mean to the coaches and players?

At that time, the main idea for SS1 was to develop a domain-specific theory about the relation between players creativity and learning from a bodily perspective (*section 2.2.4.*), to conceptualize "creative learning pathways of football" (2-month plan). Hence, SS3 was intended to provide empirical data that could "clarify developmental (i.e., learning) potentials of nurturing football players' creativity" and expose "important conditions for the expression and development of creativity" (2-month plan). In the 11-month plan, after I started to explore pragmatism and cultural psychology, the RQ of SS3 was adapted:

> How are elite youth players' actions shaped by training drills that are designed to stimulate the expression of creativity, and what does this mean for the players' learning?

Based to the ecological principle of cultural psychology (*section 6.1.*), the idea was to do a situated analysis or process observation of the creativity exercises created during the AR process. As Glăveanu (2010b) argued, cultural creativity researchers should prefer, if possible, "the detailed observation of the creative process as it takes place (and, in the case of group creativity, the creative dynamics of the group)" (p. 155). In this regard, the idea was to explore the players' actions during situations with disjunctions, relocations and tensions, which – from a pragmatist perspective – would facilitate creativity since the players habitual actions are insufficient to solve the task. Hence, the video observation in SS3 was initially intended to analyse the ways in which participation unfolded during the novel exercises created in the AR process and to relate this to learning (and I participated in a PhD course on videography to find a suitable way to do so). Further, this analysis was to be supplemented with data from informal interviews with players after the practice experiments and a focus group after the AR ended. However, to avoid drowning in data and enhance the continuity of the sub-studies, additional changes were made after my pre-defence (i.e., an external

review after one year's enrolment), where we found out that it made most sense to align the sub-studies to focus on coaches, that is;

1) How coaches could understand, value and apply creativity (SS1)
2) How coaches do/would understand, value and apply creativity (SS2)
3) How coaches can be helped to see more possibilities (SS3)

Hence, exploring potentials and obstacles of creativity in SS3 was seen as a precondition to enhance the chance of facilitating creative actions to be explored in later studies. Yet, this decision means that the players' perspectives were left out of SS3. This is also stated as a limitation in SS2, and will therefore be the key departure of my future work.

As stated in *section 6.2.2.*, pragmatists ascribe to the idea that the research question should guide researchers' choice and application of methods, as tools to help one understand the world. In SS3, the abovementioned changes meant that the methods and the unit of analysis changed. However, the inherent aim of the AR process remained unchanged (i.e., develop new exercises to facilitate creative actions), so the content of the design meetings and Adam's involvement in the process was not affected. This was fortunate since the pre-defence was held after initiating the AR process (one AR cycle completed).

As mentioned above, the three sub-studies informed each other. At the time of my pre-defence, preliminary analysis of SS2 had surfaced some issues, which impacted the final version of SS1, e.g., in terms of criticising notion of treating creativity as an end. Although coaches advocated player development, creativity was mostly perceived as a performative in-game feature, reserved for the few. While few recognized learning-oriented potentials, match-oriented ideals were the principal reasons for engaging with creativity in football practice (SS2). Also, seen as a performative end, creativity was often operationalized by means of coach-controlled activities, and it was expected that the players' creativity would develop by means of equipping them with a variety of technical skills (SS2). In other words, SS2 identified a range of cultural routines and assumptions that could be nuanced and challenged during SS3, with ideas from SS1. In turn, my experience from SS3 that it was difficult to change established practices and beliefs also informed SS1 in that match-oriented approaches could entail practices deprived from creative experiences and that "many players may be unaccustomed to creativity-stimulating intentions" (SS1, p. 500).

6.4.3. ACCESS ISSUES

During my participant observations in SS2 and action research in SS3, the elite setting may have limited my access to key events and persons helping me to first understand and later influence the cultural practices in AaB.

With 18 AaB members interviewed in SS2, I had to focus on just a few coaches during the observation, and accept that this would only provide a 'snap shot' of the coaching practices since it was done at a particular stage in the season (Potrac et al., 2002). Therefore, I observed six training sessions and two matches of the U13, U15, U17 and U19 teams. However, I was never invited into the locker rooms before or after training or matches. Since I focused on the role of creativity during training and merely used

the observations to get an overview of the cultural practice forms across the developmental pathway faced by the players (and not to study whether the coaching behaviour or tactics allowed the players to be creative in matches), I did not see this as a problem at the time. Thus, I did not actively pursue the possibility to get inside the tactical machinery, but doing so before matches might have led to insights that could have aided me in SS3, in terms of arguing how creativity could enhance match performances.

Similarly, during the AR process, I was present during several of the U17 team's training sessions with or without creativity exercises, but never joined matches. In retrospect, showing more interest in what happened in the weekends through match attendance might have helped me develop a closer relationship with Adam and potentially design creative activities targeting obstacles faced by the team in matches. Instead, I ended up as an idealistic sparring partner in relation to training content, but with no power in terms of affecting the way Adam prepared for or completed competitive matches.

As shown in SS3, Adam and I sometimes lacked creativity in the AR process, e.g., with Adam being fixed on including the competitive element and me being unable to suggest useful drills (i.e., from the football-professional perspective). Instead of a 'YES AND' attitude where no ideas are seen as bad ideas but as stepping stones to new, better ideas (Byrge & Hanse, 2013), many design meetings were marked by my ideas being met with a 'YES BUT' or even a definitive 'NO BECAUSE'. At times, the lack of appropriate ideas resulted in frustration and thus further fixedness. As argued in SS3, more football-relevant knowledge and more research showing positive effects of creative activities may have armed me to persuade Adam to say YES AND more times. In this regard, Greenwood and Levin (2007) argue that AR is a craft that requires experience and skills in facilitating the process. As exemplified in SS3, I used different techniques to facilitate the generation of ideas. In the first two AR cycles, this consisted of creativity exercises that targeted the creative abilities that we were going to use as inspiration during the meeting. Since this did not make sense for Adam, these exercises were skipped in the rest of the AR period. Hence, it could have been beneficial to apply more creative techniques when designing the new exercises. We often got stuck in a cycle where I introduced a creativity concept, exemplified its use, argued for its relevance in football, and then awaited what ideas this gave us, e.g., when scanning Adam's index of football exercises. This might be another consequence of the time issues described above. The AR literature even recommends mixing up the content of the AR cycles (e.g., Cook, 2009).

Finally, my biggest regret in relation to SS3 is that I was not more proactive in terms of including more coaches in the AR process. Two times another coach joined our design meeting for a few minutes and contributed with ideas, and at these two occasions, the dialogue became more dynamic, with more fluent generation of ideas. Also, it seemed, that Adam was less resistant when the other coach opened up to towards my alternative ideas. Hence, involving more coaches may have help me establish a creative atmosphere during the meetings and the creativity exercises done at the meetings may have felt less awkward. Moreover, running the AR process with a group of coaches who applied new ideas on their respective teams would resemble

the way AaB coaches usually worked (e.g., in groups for the youngest and oldest age groups). Further, this may have contributed to developing a community of creative inquirers – an inherent aim of AR and pragmatism.

When analysing the design meetings and my reflections from the AR process, the idea of including more coaches came up a few times, but I never acted on it. I have no excuses for this limitation, other than it was inherent to the constraints of the study since I was asked by the talent director to work with one of the two coaches holding a full-time position (*section 2.4.5.*). Other than perhaps prolonging the design meetings, it would not have taken more time, since I did not have to join the other coaches' practice experiment. Yet, it might have blurred the results. I have a bad conscience about this – especially since both the U13 and U15 coach had expressed their interest in participating. They got some consolidation when I presented the ideas behind the AR process at a seminar for all the AaB coaches, but it would have been much more useful with a workshop where interested coaches could try to play with the creativity principles (afterwards, I was able to do so with the U15 coach although he moved to another club). Hence, the tactical authenticity (*section 6.2.1.*) of this work could have been improved.

However, it should be mentioned that since the data for SS3 was produced, AaB's approach to talent development has changed substantially. Many coaches participating in SS2 had been replaced when I had completed the analysis and was ready to share the results with the club, and more left afterwards. Adam stopped shortly after we concluded the AR, moving on to become an assistant for a senior team from the 2nd best Danish league, where there was even less room for alternative exercises.

6.4.4. DESIGN ISSUES

As mentioned in SS2, a limitation was "that we only researched one club" (p. 14). Yet, in hindsight, I do not see is as a limitation. For example, from a social-psychological view, a multi-case design would change the purpose to understanding contextual differences in the evaluation and promotion of creativity within and across cultures (Glăveanu, 2019), and therefore be at risk of losing both in depth and breadth of the qualitatively different conceptions found in the particular contexts. Nevertheless, it would be interesting to study coaches' perspectives in contexts where an explicit approach to creativity has been adopted. Indeed, comparing conceptions of creativity and its development across sports, cultures, performance levels and age groups are avenues for future research.

A consequence of designing SS2 as a phenomenographic study is that it cannot be used to argue whether the established practice in AaB would develop generic or sport-specific creative abilities in the long term. Still, the practical consequences of different metaphors were considered in terms of their potential to do so. Another thing I was curious about was whether AaB coaches applied activities where the players were allowed to be creative, e.g., explicitly aimed to let the players invent new techniques or tactical solutions to be incorporated in their own or their team's gameplay. As exemplified in *section 2.3.3.*, at least one coach did mention this specific opportunity, but the results both disguise who (e.g., age level) and how many (i.e., since all

meaningful responses were compiled into a pool of meaning). Further, the statements may have been utopian ideas since the interviews included future oriented questions (e.g., what would you do if you chose to nurture creativity?) and questions that did not concern their own practice (e.g., how would you describe the most creative player in the world?), which may have elicited different kinds of creativity. During my limited time as participant observer (*section 6.4.3.*), I did not identify any activities specifically aimed at creativity (except the task they were given to do so), but the use of such practice forms at other times in the season cannot be ruled out. However, the observations were not intended to confirm the coaches' statements, but to gain more cultural insights to understand why they said what they did (*section 2.3.3.*).

CHAPTER 7. CONCLUSIVE SUMMARY

To sum up and provide an overview of the implications of this PhD thesis, this chapter gathers its main conceptual, methodological and practical contributions (more specific ones are outlined throughout the thesis). First, some general thoughts.

7.1. THICKENED AWARENESS

The general purpose of my PhD studies was to explore and challenge extant perspectives on sporting creativity and to generate new, theoretical and practical perspectives on creativity and its value and application in sport. In this regard, the PhD thesis provides novel insights about the developmental implications of nurturing creativity and affords liberating and actionable knowledge regarding the facilitation of creative actions.

As outlined in this thesis, my PhD studies started from discovering and elaborating on a range of potentials of creativity that seemed to be unexploited in sport. Then I moved on to explore potentials and pitfalls based on the perspectives of a local community of Danish football coaches. During this process, I studied whether my initial ideas resonated with or challenged the coaches' perspectives. Here, I identified gaps in the ways in which coaches defined, valued and applied creativity in football. Later, when focusing on implementing more creativity in the practices of one coach, I found out that a variety of obstacles stood in the way for changing established beliefs and practices and unfolding the potentials of creativity. Yet, the success of the practical resources cannot be judged on one study. What matters is the awareness cultivated.

First, SS1 enhanced awareness about the developmental implications of creativity. Next, SS2 amplified the awareness as to the many ways in which creativity may be implicitly understood, valued and applied, and how these aspects may be limited by cultural practice and coaching interests. Finally, SS3 cast further light on the potentials of facilitating creative actions in elite football, and enhance awareness about the kinds of obstacles that are faced when doing so. All three sub-studies enhance our awareness about the relevance of targeting creative capacities in the process of developing football-specific expertise.

With this enhanced awareness, the sub-studies may, in turn, stimulate a more nuanced dialogue about creativity in sport, as aimed in this PhD thesis (*section 1.9.*), and more generally about pragmatism, in terms of challenging conventions and stimulating new and broader interests (*section 3.5.*), and about social science, which aims to "engage in debate with the public about the goals and values of society" (Brinkmann & Kvale, 2005, p. 174). As clarified in the following sections (se also *section 6.2.1.*), this thesis is marked by catalytic authenticity (Smith & Caddick, 2012) and heuristic significance (Tracy, 2010) in that its novel concepts, analytical categories and results may enhance awareness and stimulate curiosity about the developmental implications of creativity.

Also, this PhD thesis intended to open an arena for scientific and everyday dialogues and inquiries regarding creativity in sport – not to argue for a single-lens view. As argued by McKerracher (2016), all efforts to "clarify the meaning of creativity, although productive, risks limiting this important concept to a singular definition at

the exclusion of other valuable interpretations" (p. 417). Therefore, although I dispute that extant definitions are overly weighted towards efficient in-game offensive actions, it is positive that, as Fardilha and Allen (2019) found in their review of the literature, a "single definition of sporting creativity has yet to be universally accepted" (p. 17). From a pragmatist position, one way to accomplish this multiplicity of views would be to promote a dynamic definition that represents all experiential, contextual and temporal manifestations of the phenomenon (Corazza, 2016). Another would be to develop a community of inquirers with a nuanced understanding of creativity and its potentials, who are able to critically evaluate which kind(s) of creativity would be appropriate in their current situation and creatively come up with new ways to nurture it. As exposed in *chapter 4* and *chapter 5*, each of the various approaches to sporting creativity do not describe, taken separately, the phenomenon completely, but merely narrow, static fractions of it. The same issue regards the metaphors produced in SS2, if treated in isolation. Instead, there is a rare dynamism in maintaining different perspectives, especially if we are able to flexibly navigate between them, critically appraising when different views are suitable. Hence, as a pragmatist, I encourage an enhanced commitment to multiplicity, but simultaneously warn that some conceptions – particularly the purely outcome-based ones – could be misled and harmful.

In this regard, the elaborate portrayal of the three predominant perspectives on sporting creativity in *chapter* 4 and the comprehensive state-of-the-art review in *chapter 5* were part of my pragmatist endeavours not to ignore, but understand the past, to improve the future (e.g., conceiving practical consequences of particular positions). With G.H. Mead, social selves are able to entertain a diversity of perspectives, that is, reflect with them and use them in an agentic and dynamic way (Rasmussen & Glăveanu, forthcoming; Gillespie & Martin, 2014). Instead of being fixed in an entrenched perspective, this necessitates a decentering from my own position and bridging to other positions. Thus, the process of reading the literature and especially writing chapter 4 and 5 can be seen as acts of taking other perspectives on my part in order to enhance the flexibility of my relation to the world, becoming capable of grasping and acting within the world from varied positions.

As a whole, the developmental perspective on creativity in sport (SS1), the conceptual map of creativity metaphors in football (SS2), the potentials and obstacles of creativity training in elite youth football (SS3), the overview of three predominant perspectives on sporting creativity and the state-of-the-art can nourish, nuance and guide everyday and scientific inquiries about creativity in sport communities. Hence, a key implication of this thesis is that it potentially helps stakeholders see that a situation (e.g. current practices) requires inquiry, and in turn, expand and enrich the perspectives, purposes, actions and experiences of sport participants. Hence, this thesis may inform policymakers and practitioners in sports, pave the way for more sport-based creativity projects and guide future studies on sporting creativity. Based on the results of SS2 and SS3, it is suggested that enhanced awareness of multifaceted perspectives on creativity could facilitate more critical and reflective choices regarding its application.

The latter idea is supported by narrative inquiry, which implies that "the more stories a person has access to, the more flexibility and opportunities they may have to

potentially live differently" (Smith & Sparkes, 2009, p. 9). Thus, providing access to a diversity of narratives regarding creativity and its consequences may expand "people's sense of who they are, and could be" (p. 9), helping them envision alternative futures and enabling them to do different things if they wish to – or need to. Knowing many stories about creativity could help leaders, sport psychologists or coach educators notice what stories the coaches they are working with are part of, to explore how these stories affect the coach (and their players), and to be able to suggest how alternative stories of creativity might provide new aspects that improve the quality of practice. The same would apply to coaches and parents in terms of helping their players or children.

7.2. CONCEPTUAL CONTRIBUTION

Framing new ways to understand and operationalize creativity in sport, this PhD thesis advanced a sociocultural and pragmatist understanding of creativity and applied it to the area of sports, which is under-theorised, especially from these angles. Synthetizing pragmatist, body-sociological and social psychological ideas, SS1 offer a new perspective of creativity (i.e., acting on unexploited, unperceived, or uninvented action possibilities) which emphasises context and process rather than person and product. Moreover, the exploration of football coaches' perspectives in SS2 revealed a set of implicit theories that may be used to inform extant or create new explicit theories about creativity in sport.

Offering an alternative to the in-game conceptions of creativity in sport, and focusing on Mini-C, Little-C and Pro-C rather than Big-C creations (*section 1.4.*), this novel perspective highlights the developmental value of creativity. In this regard, all sub-studies contribute to the understanding of why it is important to implement creativity in training sessions. In SS1, growth, active habits, and a range of generative capacities are highlighted as some of the possible outcomes of facilitating creative actions (*section 2.2.*). Further, the learning- and engagement-oriented metaphors generated in SS2 (*section 2.3.*) support the idea advanced in SS1 that creativity is important for player development, enjoyment and continued participation. These developmental possibilities are further illuminated by the potentials encountered in SS3 (*section 2.4.*). Thus, the thesis suggests that creativity cannot be reduced to an in-game ability to surprise and outplay opponents in order to win.

Locating the creative process in complex and dynamic interactions between the player's inner and outer environments, the perspective offered by this PhD thesis stands out from much research in the field, where creativity is mainly linked to cognitive-perceptual features. In other words, creative actions are situated in the transaction between the player and the situation – it's not a personality trait or objectively rare solutions, but a quality of action, defined in relation to a process where personally novel and meaningful affordances are explored in response to disturbed situations. From this perspective, creativity is an active process of making, solving and redefining situations. Creativity helps the players adapt their actions to new situations (e.g., unusual tasks) and adapt the situation to their actions. Accordingly, without neglecting the role of personal qualities (i.e., generative capacities), this

perspective contributes by highlighting the role of the social, cultural and physical environment in the given players chance to act creatively in any given situation.

With the transaction as the point of departure, and connected to developing a theoretical model of possibility in sport (*section 2.2.5.*), this PhD thesis brings in and integrates various theoretical strands (regarding the body, affordances, habits, play etc.) when outlining key constituents of creative action in sport training in relation to normativity, materiality and intentionality. Extant research on creativity in sport provides support for each of these categories in terms of their importance for creativity, but no studies have considered their dynamic interaction in sport. In this regard, SS2 and especially SS3 expose how football coaches' workplace realities and experiences affect their capability to facilitate creative actions in terms of delimiting the variety of material conditions employed, the kinds of intentions entertained during training, and of modalities of actions accepted by the norm. Hence, stressing the role of the social, cultural and physical environment in developing creative capacities, this thesis offer novel conceptual resources for establishing a creative environment. For example, SS1 outlined various personal qualities to be nurtured.

Inspired by one of the axioms in pragmatist and sociocultural lines of thought, this thesis highlights and examines the complex and dynamic relation between beliefs and practices and how both are continuously moulded by the transactional interplay between coaches interests and social, cultural and historical features. The assumption that beliefs guide practice was used to argue for the new approach in SS1. Further, SS2 shows that football coaches' conceptions of creativity are shaped by and shape particular coaching interests and cultural practice forms, and that this may have positive or negative consequences for the players possibilities (and abilities) to exploit, perceive and generate personally novel action possibilities. In turn, some views could limit player development, participation and even performance. Like SS2, *chapter 5* exposed a wealth of ways to understand and value creativity, bearing with them different practical consequences. Also, SS3 showed that opposing beliefs about creativity and good coaching made it hard to integrate creativity in practice. SS3 also elucidates how the dynamic interaction between personal coaching interests and capacities (e.g., to make the team play aesthetic football), temporal (e.g., bad results), cultural (e.g., what actions are valued) and political aspects (e.g., peers' reception of new exercises) determine the chance of implementing creativity-nurturing practices forms. Accordingly, several parts of this thesis stress the importance of critically reflecting on the purposes served by one's approach to creativity and carefully consider whether it entails unintended and/or limiting consequences.

There is nothing wrong with desiring in-game creative performances. What is challenged here is the often-entailed educational means which may be deprived by exploration and novelty, overly controlled by coaches and focus too much on efficiency. Moreover, I do not intent to reject the relationship between creativity and results, but to highlight that this should neither be the single nor leading argument for working with creativity in sport. Stakeholders should critically consider whether result-oriented conceptions appropriately serve their talent environment. Especially, match-decisive justifications are undesirable, if these are used to justify inflexible, disempowering or undifferentiated practice forms, where creative processes are

neglected. Finally, I do not intend to make developmentally oriented creativity a universally leading criteria for life in or out of sport. It would be meaningless to require everyone to constantly be creative. However, I do indeed celebrate explorative creativity in this thesis, by highlighting the benefits of creative life forms.

7.3. METHODOLOGICAL CONTRIBUTION

In a field where scholars rarely outline their ontological and epistemological assumptions, this PhD thesis has demonstrated how a philosophical stance in pragmatism can facilitate the production of in-depth, explorative, context-sensitive, and ecologically valid studies of creativity in a sport context, which embrace practitioners' voices and contribute to the way we understand life in the context of football. Besides informing the approach to creativity adopted in SS1 and applied in SS3, pragmatist principles (*chapter 3*) guided all stages of the research process, including the development of the methodologies for SS2 and SS3. Specifically, the notion of person-environment transactions (*section 3.1.*) is useful in guiding how social phenomena should be understood and studied. The methodological significance of this thesis regards its uniquely designed qualitative and participative accounts of a concept that has often been examined experimentally and quantitatively. The thesis also highlights the usefulness of doing contextualised research focused on coaches' perspectives and particular kinds of training activities rather than measuring sport-specific divergent thinking factors at certain time points. Hence, this PhD thesis exhibits how qualitative approaches may expand and deepen our knowledge regarding a variety of socio-cultural features and personal interests and dispositions that, in combination, can enable or disable creative actions or practices.

Instead of being the neutral, detached observer and analyser of social practice who does his or her best to avoid disturbing the natural course of events and activities, a methodological contribution of this PhD is to embrace the possibility to make a difference in the real world, especially manifested in action research in SS3, but also the purposeful design of SS2 where I gave the coaches the task of designing a new drill in order to gain additional insights in their conceptions (see *section 2.3.3.*). More specifically, this PhD thesis contributes with qualitative insights in football coaches' conception of creativity (SS2, *section 2.3.*) and the potentials and obstacles of applying creativity exercises in an elite football setting (SS3, *section 2.4.)*. Besides being the first (among studies on sporting creativity written in Danish or English, cf. *chapter 5*) phenomenographic (SS2) and action research (SS3) investigations on the role of creativity in sport, these rarely used methodologies may inspire other researchers who investigate "hot topics" in sport, such as resilience or enjoyment.

The methodological contribution also regards the proposal of new analytical categories to examine and organise the data, that is metaphors (SS2), coaching interests (SS2), and potentials and obstacles (SS3), which are also rare in the general creativity literature. The categories in SS3 could also be considered as possibility-enabling and -restricting factors. While extant research often draws attention to creativity stimulants and does not study the barriers directly, an original contribution of SS3 is to highlight a range of features that obstruct the application of creativity

exercises. Last but not least, I invite other creativity researchers in sport to use and expand the analytical categories created in the sub-studies.

7.4. PRACTICAL CONTRIBUTION

As argued in this PhD thesis, organised sports have a large unleashed potential to develop creative capacities that could be vital for sport participants on and off the pitch. Finding workable ways to nurture creative capacities in and through sport could be important for the development and flourishing of individuals, groups and communities. Hence, a key element of this PhD thesis was to develop new tools to guide practical undertakings in using creativity as a means to enhance the growth and enjoyment of sport participants. Creativity may not only help us solve unforeseen challenges, but enable us to shape our life and undertakings in intrinsically meaningful ways by originating novel purposes and responses. In turn, groups may expand their cultural repertoires and communities may maintain extant and attract new participants. Yet, these future possibilities may be hard to achieve due to the current conceptions, practices and structures of sport. Nevertheless, this PhD thesis provides some concrete tools and resources that could help practitioners overcome traditional bonds and facilitate novel forms of social life and thereby take key steps towards unfolding the creative potentials of their sport environment.

The first step is to dissolve the idea that creativity would harm team performance.

> If you always say 'you have to be creative' then I am afraid that the players start to do a lot of things that can hurt the team. Try to find something that doesn't work. This is not something you should look for. (Flemming, SS2)

Among more, such beliefs may be challenged by the developmental approach advanced in SS1, the metaphors created in SS2 and the potentials encountered in SS3. Besides refining what it means to be creative, the adoption of creativity-nurturing practice forms may also require a fundamental change of what it means to be a coach and a gaining more nuanced understanding of the requirements in complex games.

Another important step is to recognise that facilitating the players' exploration of novel action potentials during training – besides its other benefits – could develop in-game creative capacities, not necessarily to surprise opponents, but to stay open and adapt to changing and unpredictable situations, take initiative and dare to make spontaneous decisions for the sake of the team – not selfish, irresponsible deeds. In this way, creativity is also seen as a means of personal development, not only a performative end, and in turn, creativity is not only important with the best offensive players on the team. In this regard, all three sub-studies call for a change of mentality – and a quite radical one – in the field of competitive interaction sports (*section 1.10*). The focus on training to perform creatively and win should be downplayed or at least supplemented with an enhanced focus on training and performing creatively to develop and thrive in and out of sports. This would have wide-ranging consequences if embraced at an institutional level. While the first mainly build on the creativity of the coach, who is seen as being solely responsible for the players' learning process, the latter embrace all players' creativity.

Hence, a decisive step could be to invite one's peers to interrogate and negotiate personal and cultural beliefs, assumptions and representations about creativity and its value and development. This process could be stimulated by the metaphors from SS2 (*section 2.3.6.*) and the potentials, obstacles (*section 2.4.3.*) and questions outlined in SS3. For example, the metaphors could generate novel ways of appreciating the potentials of creativity and consider the consequences of varied views. It could also be considered whether the obstacles are evident in the environment in question and how they could be dissolved. After commonly agreeing which creativities to utilize, why they are important and how they could be developed, another crucial step would be to adapt coaching behaviours and design new training activities. This PhD thesis guides such actions by the suggestions for how the exploration of novel action potentials could be facilitated (SS1; *section 2.2.8.*) the concrete examples of creativity exercises that were invented during the AR (SS3), and the principles for designing them (SS3, *section 2.4.4.*). Further, the list of metaphors (SS2, p. 8-9) carry clear practical value and may direct the action of coaches (*section 2.3.7.*).

In sum, this PhD thesis may enable stakeholders in sport communities (leaders, coaches, parents, associations, etc.) to make more reflexive choices regarding the role of creativity in their sport, or their specific training environment, increase their awareness about their own role in the players' creative abilities, and expand their action possibilities in terms of facilitating creative actions to utilize the developmental role of creativity.

7.5. MY FUTURE RESEARCH

As argued in SS1, exemplified by coaches in SS2, encountered and envisioned in action during SS3, and elaborated in this PhD thesis, there are multiple reasons why future research should attend to the benefits of creativity in sport and explore different kinds of creative life forms. Throughout the present work, and especially in *chapter 4* and *chapter 5*, suggestions for future research have been presented. In this regard, I have repeatedly pointed out the inclusion of sport participants' voices as a central aspect, e.g., in terms of their experiences of creativity-nurturing training. Although my PhD studies were initially inspired by such work (see *section 1.2.*), they ended up focusing on coaches' perspectives (see *section 6.3.2*.). In the future, I will focus on the perspectives of sport participants from different kinds of sports, who play and perform at various levels.

What the two empirical sub-studies has done is to elaborate in contextualized detail the experiences and perspectives of particular coaches in ways that can expand and deepen our understanding of the complex and dynamic range of socio-cultural, interpersonal and personal features that, in combination, shape sport participants' possibility to be creative. These insights were not intended to be exclusively representative of particular situations, events or professions (see *section 6.1.5.*) but, from these studies, and the perspective in SS1, coaches, players and parents, among others, can learn about the required abilities, developmental activities, and probable outcomes of being creative. Inspired by the study of Steve Nash (see *section 5.4.2.* and *5.4.11.*), further insights in the personal, relational and socio-cultural aspects that combine to shape creative practices and actions may be gained by in-depth case

studies of athletes who have particular experiences with creative life forms. The study of Nash led to an in-depth understanding of the development of his in-game creative behaviour (i.e., treated creativity as an end), but disguised the kinds of creativity that may have been part of his developmental pathway.

Hence, in my future research project, which is funded by the Danish Ministry of Culture, I will continue to elaborate on the developmental implications of creativity in sport by taking up Durand-Bush and Salmela's (2002) rather unexploited advice for researchers to "examine the role of creativity and innovation in the development and maintenance of expert performance" (p. 166). This project is intended to elaborate on the developmental perspective advanced in SS1 and expand *theme 6* and *theme 7* from the state-of-the-art review (*section 5.4.6.*; *5.4.7.*), where creativity is important to handle everyday challenges in sport and contribute to enjoyment and personal growth. Hence, the aim is to enhance understanding of the possible creative forms of life that in various ways, in different times and situations, contributes positively to the journey towards athletic exceptionality.

More specifically, I have outlined a preliminary research design, where the general idea is to conduct retrospective interviews with expert Danish athletes purposively sampled for having creative experiences to share (e.g., based on SS1). The chosen athletes are known among peers for doings things differently, exploring many unusual ideas, breaking the norms, rethinking their playing style, approaching the training in an unconventional way, inventing new skills or overcoming adversity and challenges in a unique, surprising way. Hence, I do not sample athletes who are publicly renowned for their in-game creativity, but those who have been engaged in creative actions during their sampling, specialization and investment years. The focus is on how creative actions during training and everyday life has helped them develop, thrive and maintain their engagement in their sports.

One of the world's best handballers, Mikkel Hansen, is probably the most well-known Danish example of how creativity has contributed to an athletes' development. Through creative experiments and curiosity in his play with the ball in his youth, Mikkel Hansen reinvented the way in which we can throw a handball. This new technique helped Mikkel compensate for his slender physique, exploit his eye for teammates and preserve his love of the game (DR, 2019b). Recently, the Danish Handball Association has expressed the concern of whether the collective Danish sport culture is able to develop unique players like Mikkel Hansen in the future (DR, 2019a). Exploring this kind of examples, my future research will contribute with coveted knowledge about how creativity can be nurtured.

To the best of my knowledge, this will be the first study to specifically explore athletes' perspectives on creativity, their experiences of being creative, their opinions about whether they have had the possibility to be creative throughout the various stages of their sport career, and their perception of what this has meant to them. This is envisioned to contribute with concrete and accessible examples of particular kinds of creative actions and experiences as well as the environmental and personal qualities that enabled them.

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Appendix A. Review Method

This appendix describes how the review in *chapter 5* was conducted.

Searching for Eligible Papers

The literature search included combinations of the following keywords:

<div align="center">

creativity

AND

sport OR player OR athlete OR game OR ball

OR

football, soccer, basketball, hockey, handball, netball, rugby, volleyball, polo, ultimate, lacrosse, tennis, squash, shuttlecock, badminton, racquetball, hurling, floorball, boxing, wrestling, karate, taekwondo, fencing, kendo, ju-jitsu, judo, baseball, cricket, softball.

</div>

The search was conducted in relevant electronic databases, namely *SPORTDiscus, PsycARTICLES*, *Web of Science, PubMed, ProQuest* and *Scopus,* which are widely used in literature reviews about sport topics (e.g., Andersen et al., 2018; Caddick & Smith, 2014; Vella, Braithewaite, Gardner, & Spray, 2016). Making sure that the terms were searched in different forms, the truncation symbol (*) was added to the root of the words. This review did not include a search for synonyms or associated terms (e.g., innovation, originality, divergent, imagination, inventiveness, discovery, improvisation, exploration) since this would be too exhaustive and time-consuming. Further, if doing so, the review would be biased by a particular interpretation of creativity and the surfaced work would not necessarily apply the creativity concept.

Supplementing the primary search and keeping track of the progression of the field, additional papers were added continuously, by ancestry searches (Whittemore & Knafl, 2006) of all eligible papers and scanning content alerts from key sport science journals. Further, creativity journals imagined to be particularly relevant were manually searched (e.g., *Journal of Creative Behavior; Psychology of Aesthetics, Creativity, and the Arts; Creativity Research Journal; Thinking Skills and Creativity).*

The literature search was completed in February 2016 and repeated towards the end of my PhD studies (October 2018), for 2015 to 2018, to ensure that new contributions were considered before concluding the analysis and writing this state-of-the-art chapter.

A preliminary search (Green et al., 2006) on SPORTDiscus for 'creativ*' and 'sport*' had revealed that the concept of creativity had attracted the interest of researchers dealing with widespread sport topics, including – but not limited to – coaching, performance excellence, talent development, sport participation, disability sports, exercise, urbanism, sport psychology, organisations, sport marketing, physical education, sport for development and peace, research methods, and sport technology. Further, a Google Scholar search for 'sport' and 'creativity' (1988-2019) elicited 145.000 hits. Due to the abundancy of work available on the topic, the initial searches suggested that strict inclusion and exclusion criteria were required to streamline the review.

Specifying Selection Criteria

The process of checking paper eligibility involved screening of titles, abstracts, and subsequently assessing full-texts. In order to ensure a focused and objective review, where inclusion was based on relevance rather than opinion, several inclusion and exclusion criteria were applied. First, the selected literature was limited to peer-reviewed journal articles published between 1989 and 2018, written in Danish or English and with abstract available online (excluded if unable to get the full text). Qualitative, quantitative, theoretical and philosophical studies were included and no restrictions were applied regarding study design, methodology, sample size or participant characteristics.

Ensuring a substantial benchmark for scientific rigour and to avoid data duplication, books, chapters, material from sport associations and other grey literature were excluded (Vella et al., 2016; Green et al., 2006)). While the above criteria were added to the literature search, the following were manually handled after retrieving the full texts. To answer the review questions, a thorough description of creativity was needed, either explicitly (e.g., an operational definition or theoretical approach) or implicitly (e.g., providing enough information to interpret the meaning), pertaining to the review questions. Further, a paper was only included if its application of creativity pertained to the players. Hence, several papers regarding the creativity of coaches, leaders, sport psychologists, or others, and studies of creativity at various sport-organisational levels were excluded. Also, an abundancy of papers was excluded because the only reference to creativity regarded "creative" methods, e.g., fictional representations and creative analytical practices. In this regard, the scanning and sorting of relevant literature was complicated by the Creative Commons License, and recurring statements that creativity is required to develop new ideas regarding a given topic. Although irrelevant for the present review, several of the excluded studies were kept for future projects, since several of these topics appeared to be under-researched. Finally, papers were only considered eligible when concerning player creativity in the contexts of *ball games,* as well as *racket* and *combat sports*. More specifically, as inspired by Andersen et al.'s (2018) review on team sport and health, the present review was delimited to sports characterised by the features listed in *section 1.10*.

For example, due to the second item, Eraslan's (2012) analysis of university chess players' creativity and decision making was excluded. Also, the last item resulted in removing Strachan, Cote and Deakin (2011), since they focused on the perspectives of coaches from of swimming, diving, and gymnastics. In this regard, studies were excluded if dealing with sports where scores are provided by a panel of judges. In sum, these context-specifying criteria resulted in excluding 35 papers focusing on creativity in aesthetic or expressive disciplines (e.g., rhythmic/artistic gymnastics, dance, figure skating), as well as 23 papers on creativity in action or extreme sports (e.g., freestyle skiing/snowboarding, skateboarding, BMX, surfing), but these were saved for other purposes (e.g., discussion and future reviews). Studies from track & field (e.g., running, jumping, throwing), endurance (e.g., cycling, Nordic skiing), target (e.g., golf, archery), water (e.g., kayaking), winter (e.g., downhill), strength & conditioning, and motor sports, among others, were also excluded. Several studies regarding motor creativity (of children; primarily PE contexts) has been excluded,

since they did not make sufficient references to sport (Bournelli, Makri, & Mylonas, 2009; Moraru et al., 2016; Richard, Lebeau, Becker, Boiangin, & Tenenbaum, 2018). Lastly, 37 studies on creativity in physical education (i.e., kindergarten to high school) were excluded.

Appraising the research quality (Green el., 2006), general considerations were made due to the varied designs, methods and epistemologies of the primary sources, the wide scope of the review and the large sample. Specifically, the research quality was evaluated on a 2-point scale (i.e., high or low) in terms of methodological or theoretical rigour, authenticity, informational value, trustworthiness, journal ranking, readability and practical implications (Whittemore & Knafl, 2005; Williams & Shaw, 2016). Three studies were excluded solely based on these evaluations, while other sources of low quality contributed less to the analysis. The present review was not limited to high-end quality studies, since the aim was to outline the diverse ways in which creativity had been studies and e.g., not to generate a new theory.

Appendix B. Interview Guide (SS2)

Purposes, themes and examples of questions comprising the semi-structured interviews:

Purpose: **Establish an in-depth understanding of AaB practices**

Theme**:** ***Organizational Culture***

Questions: If a coach from another TDE was invited to coach in AaB, what would be the biggest differences for them? How would you describe your relationship to the other coaches in AaB?

Theme**:** ***Contextual Talent Development Processes***

Questions**:** What have been the keys to AaB's success as a talent Academy? How would you describe AaB's coaching system from U13 to U19? How should coaching of football talent be conducted? In your opinion, what comprises a good training environment?

Theme**:** ***Specific Microstructures of Coaching Practice***

Questions**:** How do you see yourself as a coach? What is your football philosophy? What are your most vital means for developing players? Describe a typical training session? What defines a good training activity? What is your favourite drill?

Purpose: **Explore a multitude of meanings about creativity in football**

Theme: ***Personal Significance of Creativity***

Questions: What is the first thing that comes to your mind when hearing the word creativity? What does creativity mean to you (everyday life; as a coach)? What is creativity in football? Describe a situation, solution or action you consider to be creative – why is that creative?

Theme: ***The Value of Creativity in Football***

Questions: Why is creativity important? Which role does creativity play in football (matches, training, everyday life)? What are your best arguments for working (more) with creativity in football? When is creativity most important? What does creativity mean for a players' development?

Theme: ***Characteristics of Creative Players***

Questions: Name a football player you consider to be creative – what makes him creative? What does it take to be creative? Which kinds of behaviour would you look after to identify creative players?

Theme: ***Promotion of Creativity***

Questions: What do (or would) you do to nurture creativity? What features are important in a creativity-stimulating training environment? What is the role of the coach in terms of promoting creativity? Why do you think AaB has been able to develop creative players? Describe a drill that you think would stimulate creativity?

Theme: ***Obstacles to Creativity***
Questions: What may limit creativity in football? In your view, what are the
                challenges of implementing more creativity in AaB?

Appendix C. Analytical Themes (SS2)

Global theme	Organising theme	Basic Themes
Players	Roles	Playmakers; Facilitators; Game changers; Tricksters; Escape artists
	Attributes	Offensive mind-set; Very curios; High agency; Courageous; Flexible decisions; Visionary; Take initiatives; Game intelligent; Relationally skilled; Large toolbox; Dexterous technique; Agile; Situationally sensitive; Skilful orientation
	Shortcomings	Conformity; Monotonous Choices; Reliability; Fear Judgment; Defensive Mind-set; Play like a Machine; Wear Blinkers
Actions	Appropriate	Efficient; Intuitive; Deceiving; Influencing; Simple, Adaptive
	Original	Novel; Extraordinary; Unapparent; Spontaneous; Unorthodox; Aesthetic
	Boundary-breaking	Forecasts; Patterns; Scripts; Norms; Habits
	Interplay	Relational uniqueness; Collective Extemporization; Deliberate co-creation; Dynamic positioning; Adaptable game plans
Output	Acute benefits	Attractable; match-decisive; Favourable situations; Break defences; Superiority in duels
	Better development opportunities	Improve Practice; Increase wellbeing; Improve self-practice; Coach endurance
	Long-term game performance	Broadened team repertoire; Increased game insight; Decisional transfer; More everyday refinements; Technical development; Novel creative niche; Self-made playing style;
	Disadvantages of a creativity bias	Inefficiency; Destructive effects; Compromise organization; Segregation
Practice	Game formats	Free play; Duelling; Speed Games; Circus Training; Inventive Processes
	Design variables	Original situations; Task constraints; Navigate spaces; Chaotic situations; Situational nuances; Offensive structures; Aide-mémoire; Modes of deception; Asking questions; Find solutions; Choose solution; Facilitate synergies

	Reinforcements	Articulation; Encouragements; Authorization; Praising; "Good" mistakes; Rewarding; Creative attitude
	Cultivation of spare time experiments	Inspire self-practice; YouTube; Video projects
	The social milieu	Openminded atmosphere; Room to make mistakes; Trusting relationships; Flat hierarchy
	Academy practices	Transformational battle; Economic constraints; Open-ended concept; patience
	Inhibitory coaching	Monotonous drills; authoritarian style; Rigid game concepts; Joystick coaching; Quality demands; Punishment; Result orientation; Focus on errors; Supercilious attitude
History	Past affairs with significant others	Parents; Previous Coaches; Previous Teachers
	Previous sport participation	Diversification; Backyard experiments
	Innate features	Genes; Personality
Coaches	New-thinking training	Inventing novel skills; Designing new drills; Television-training transfer; Coach-athlete interactions
	Surprising in matches	Preparing plan A, B, C; Tactical flexibility; Reinvention; Playing philosophy

Appendix D. Time Schedule

GANNT-CHART @ Ludvig's PhD Project

Legend: * = deadlines | T = tournament period | Planned | Fulfilled | not fulfilled

Timeline header: 15 | 2016 (12) 1 2 3 4 5 6 7 8 9 10 11 12 | 2017 1 2 3 4 5 6 7 8 9 10 11 12 | 2018 1 2 3 4 5 6 7 8 9 10 11

ACTIVITY / MONTH

Generally
- 2 month plan
- 11 month plan
- PhD portfolio
- PhD courses
- Conference participation (QRSE + Creative University Conference)
- Teaching courses on Sports Science (1 day per week)
- Supervising two 4th semester groups
- PhD submission (writing supplemental material)

Sub-study 1
- Preparation: literature search; selecting scholars;
- "Data-collection": Reading selected material
- "Data-analysis": Connections between learning, creativity, body
- Conceptualization: develop a new model for creative learning in sport
- Working on paper (expected submission *)

Sub-study 2
- Preparation: Acess to the field
- Preparation: Grasping the field; habituating to the field
- Preparation: Interview guides and observation schemes
- Data-collection: Observing coaching behavior and training activities
- Data-collection: Interviews entrants involved in AaB's talent development
- Data-analysis: code, categorize and interpret data
- Finalize paper (expected submission *)

Sub-study 3
- Preparation: Develop creativity exercises and training principles
- Preparation: Design process and strategy for action research
- Data-collection: Cunduct action research at U17 team
- Data-collection: Observe "creative" practices at U17 team
- Data collection: Interview U17 coaches and players
- Data-analysis: code, categorize and interpret data
- Finalize paper (expected submission *)

End Notes

[i] Divergent thinking measures of *fluency* (i.e., number of ideas), *flexibility* (i.e., number of different categories of ideas) and *originality* (i.e., unusual ideas), which are typically the main variables in the Torrance Tests of Creative Thinking.

[ii] The Torrance Tests of Creative Thinking consists of a verbal (e.g., unusual uses; just suppose; impossibility) and figural forms (e.g., turning numerous small circles/squares into pictures) with a number of items.

[iii] This form of the Torrance Tests of Creative Thinking consists of drawing tasks (e.g., turning numerous small circles/squares into pictures) and typically measures fluency, flexibility, originality and elaboration.

[iv] Urbans Creativity Test e.g. comprise drawing in big squares and measures boundary breaking (risk-taking) and unconventionality.

SUMMARY

The meaning of creativity is indeed the single most perplexing issue within creativity research, with approaches spanning from personal experiences of insight to revolutionary creations with historic impact. Posing this question in competitive sport does not reduce the complexity of creativity.

This PhD thesis traces out the field of creativity studies in sport, which covers a smorgasbord of ideas about creativity, with diverse practical consequences for sport participants. In this growing field, the meaning of creativity ranges from the aesthetical quality of novel game solutions to a capacity of talents to solve problems in their everyday life.

Besides displaying performance- and result-oriented ideas concerning the role of creativity in sport, predominant research in the field is absorbed in defining, measuring and developing creativity as an outcome of distinct kind of sport participation rather than an integral part of it.

Nuancing the dialogue regarding the meaning, value and application of creativity among sport researchers and practitioners, this PhD thesis challenges the narrow, but predominant, idea that creativity is an in-game phenomenon, reserved for the best offensive, match-decisive players on a team, who are able to deke opponents, and produce chances.