O planeamento no processo de treino: da teoria à implementação prática no futebol.

Dissertação apresentada com vista à obtenção do grau de Mestre em Treino Desportivo – Treino de Jovens, à Faculdade de Desporto da Universidade do Porto, ao abrigo do Decreto-Lei nº74/2006 de 24 de março, na redação dada pelo Decreto-Lei nº 65/2018 de 16 de agosto.

Orientador: Professor Doutor João Ribeiro
Coorientador: Professor Doutor José Afonso

Maurício Facchini

Porto, setembro de 2023

FICHA DE CATALOGAÇÃO

Facchini, M. (2023). *O planeamento no processo de treino: da teoria à implementação prática no futebol*. Porto: M. Facchini, Dissertação de Mestrado apresentado à Faculdade de Desporto da Universidade do Porto.

Palavras-chave: COACHING, FUTEBOL, PLANEAMENTO, TREINO.

AGRADECIMENTOS

Com a conclusão desta importante etapa da minha vida, agradeço e dedico este trabalho a todas as pessoas que me ajudaram durante este processo.

Em especial, à minha Família, meu pai, minha mãe, meu irmão, minha cunhada e meu sobrinho, por toda a paciência que sempre tiveram comigo, por todo o apoio e suporte incondicional desde sempre. Muito obrigado!

Agradeço aos meus amigos do Porto, pelos incontáveis momentos de ajuda e de amizade. Em especial, à Luisa e ao Gean, por estarem comigo em todos os momentos.

Meu muito obrigado ao Leça Futebol Clube, por ter autorizado meu projeto de investigação e ter-me dado a oportunidade de realizar meu estágio de treinador. Agradeço a todos os diretores e coordenadores; aos atletas e aos responsáveis de educação dos atletas, os quais foram impecáveis ao longo de toda a época desportiva.

Agradeço a todos os meus amigos da minha cidade natal no Brasil, Arroio do Meio, que de alguma forma sempre me ajudaram e me apoiaram. Em especial, aos meus amigos do MQG e do CT Reabilitação e Condicionamento Físico.

Agradeço a todos os professores que me ajudaram durante o meu processo acadêmico, tanto da UNIVATES quanto da FADEUP. Agradeço a todos os meus orientadores, os quais ajudaram com seus excelentes contributos nessa dissertação.

Agradeço a Professora Doutora Ana Ramos, por toda a ajuda e disponibilidade desde sempre. Seus excelentes contributos em ambos os artigos foram essenciais para a conclusão desse projeto. Muito obrigado!

Um agradecimento especial ao Professor Doutor João Ribeiro e ao Professor Doutor José Afonso, que desde o início do processo, demonstraram disponibilidade e um grande profissionalismo. Agradeço por todas as sugestões, ensinamentos e orientações na busca da excelência a nível acadêmico e profissional.

Por fim, dedico este trabalho a todas as pessoas mencionadas. Desejo-lhes tudo de melhor em suas vidas e que consigam realizar todos os seus sonhos.

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RESUMO

Nesta dissertação, exploramos os pressupostos e conceitos pedagógicos que podem contribuir na elaboração do planeamento e a interação da implementação do planeamento a curto e longo prazo no processo de treino desportivo. Assim, primeiro, realizamos uma revisão narrativa sobre as divergências e os paralelos dos contextos de Educação Física e do *coaching* relacionados ao planeamento. Segundo, realizamos um estudo de caso com uma abordagem qualitativa sobre a implementação e a interação de um planeamento de 8 semanas em uma equipa sub-10 masculina de futebol. Como principais resultados, na revisão narrativa, destacamos que o contexto de Educação Física e de *coaching* podem apoiar a sua intervenção pedagógica com base na avaliação contínua da aprendizagem e da performance. Através dessa avaliação, os treinadores e professores podem implementar estratégias pedagógicas personalizadas para atender às necessidades específicas dos alunos e jogadores de acordo com as exigências emergentes do processo. Por outro lado, a implementação do planeamento no processo de treino pode ser afetada por uma multiplicidade de fatores. Neste domínio, pode-se destacar fatores internos, como as respostas dos jogadores perante as tarefas no treino, e fatores externos, como a ausência dos jogadores nos treinos. Além disso, o planeamento foi influenciado pela performance dos jogadores nas tarefas de treinos e nos jogos. Dessa forma, o planeamento de longo prazo precisou ser (re)ajustado de acordo com o desempenho dos jogadores a curto prazo, o qual influenciou a progressão dos conteúdos planeados a longo prazo. Como estratégia para gerir esses constrangimentos e avaliar a performance dos jogadores, os treinadores podem utilizar indicadores de desempenho, como, por exemplo, os princípios táticos do jogo de futebol. Esses indicadores podem ajudar os treinadores a planearem contextos adequados ao nível de desempenho dos jogadores e a progredir de forma mais ajustada e eficaz os conteúdos planeados a longo prazo. Esperamos que essas informações possam contribuir com importantes implicações práticas aos treinadores, principalmente na elaboração e implementação do planeamento no processo de treino do futebol.

Palavras chaves: *Coaching*, futebol, planeamento, treino.

ABSTRACT

In this dissertation, we explored the pedagogical assumptions and concepts that can contribute to the elaboration of planning, and the interplay between short- and long-term planning in the training sports process. Therefore, first, we carried out a narrative review on the divergences and parallels in the contexts of Physical Education and coaching related to planning. Second, we carried out a case study with a qualitative approach on the implementation and interplay of an 8-week planning in an under-10 male soccer team. As the main results, in the narrative review, we highlighted that the context of Physical Education and coaching can support pedagogical intervention based on the ongoing assessment of learning and performance. Through this assessment, coaches and teachers can implement personalized pedagogical strategies and goals to meet the specific needs of students and players according to the emerging demands of the process. On the other hand, the implementation of planning in the training process can be affected by a multitude of factors. In this domain, internal factors can be highlighted, such as the players' responses to tasks in training, and external factors, such as the absence of players in training. Furthermore, planning was influenced by players' performance in the tasks during the training and in the official games. Therefore, long-term planning needed to be (re)adjusted according to players' short-term performance, which influenced the progression of planned long-term content. As a strategy to manage these constraints and to evaluate players' performance, coaches can use performance indicators such as the tactical principles of play. These indicators can help coaches plan training sessions suited to the players' performance level, and progress the content planned in the long term in a more adjusted and effective way. We hope that this information can provide important practical implications for coaches, especially in the development and implementation of planning in the soccer training process.

Keywords: Coaching, soccer, planning, training.

CAPÍTULO I

INTRODUÇÃO GERAL

1.1 Introdução Geral

O treino desportivo pode ser entendido como o processo mais importante e influente que procura induzir transformações positivas ao nível da performance dos jogadores e das equipas (Garganta, 2008). Neste sentido, pode-se afirmar que o treino visa dotar os jogadores de competências tático-técnicas e capacidades físicas e mentais, que lhes permitam atingir o mais alto nível de performance (DeWesse et al., 2015; Stones et al., 2007). A aprendizagem ocorre através de um constante processo de transformações internas do jogador, resultantes da sua interação com o conteúdo do treino e com o ambiente onde está inserido (Coutinho et al., 2022). No âmbito do treino, geralmente são os treinadores responsáveis por desenhar e manipular os exercícios para otimizar a aprendizagem e o desempenho dos jogadores. Dessa forma, uma das principais preocupações dos investigadores na área do treino desportivo ao longo dos últimos anos tem sido compreender a atuação do treinador no processo de treino, geralmente classificado como a área de *coaching* no desporto (Cushion et al., 2003; Cushon et al., 2006; Gibson & Groom, 2018; Jones & Wallace, 2005).

Dentro do processo de treino desportivo, uma das tarefas principais de quem orienta o treino passa por definir os objetivos e elaborar o planamento e as estratégias de treino (Garganta et al., 2013). O planeamento envolve a seleção de temas, conteúdos e a sua disposição sequencial, que engloba várias ordens temporais, desde o planeamento de curto até ao de longo prazo (Afonso & Mesquita, 2018). O planeamento de longo prazo é habitualmente classificado como macrociclo (p.e., um ano ou uma temporada competitiva), enquanto o planeamento de curto prazo pode ser identificado através dos microciclos (p.e., unidades de treino ou uma semana de treino) (Afonso & Mesquita, 2018). Guiados pelo plano de longo prazo, o planeamento de curto prazo serve para ajudar o treinador na implementação de atividades práticas, nas quais são projetadas em uma sequência mais apropriada possível para aprimorar a aprendizagem e a performance dos jogadores (Kinnerk et al., 2021; Light, 2012).

Não obstante, a conceção do planeamento, tanto em microestruturas (curto prazo), quanto em meso e macroestruturas (médio-longo prazo), podem sofrer alterações durante a sua implementação por diversos fatores (Jones & Wallace, 2005; Pass et al., 2022). Por exemplo, as alterações no planeamento podem ocorrer por fatores externos, como a assiduidade dos jogadores, ou por fatores internos, como o ritmo de aprendizagem dos jogadores. Portanto, o planeamento de curto e longo prazo em desportos coletivos pode ser uma tarefa desafiadora para os treinadores, uma vez que estes não podem controlar as complexas variações inter- e intra-individuais induzidas pelo estímulo de treino (Afonso & Mesquita, 2018). Na perspetiva de melhor compreender e otimizar o planeamento no contexto de treino, recentemente, as investigações na área do treino desportivo têm se concentrado em compreender como o planeamento a curto, médio e longo prazo é realizado, e se entrelaça no processo de treino (Afonso & Mesquita, 2018; Kinnerk et al., 2021; Loureiro et al., 2022; Martín-García et al., 2018; Pass et al., 2022).

Dentro do planeamento, os treinadores devem ter a capacidade de organizar os conteúdos do treino em uma sequência pedagógica lógica, que facilite a compreensão e a aprendizagem dos jogadores. Assim, o envolvimento do treinador com teorias pedagógicas inerentes ao contexto de treino pode desenvolver uma maior responsabilidade e conhecimento pedagógico nos treinadores, ao planear o seu processo de treino (Kinnerk et al., 2021; Taylor et al., 2023). Portanto, o planeamento no contexto de treino pode beneficiar-se ao procurar pressupostos pedagógicos e didáticos dentro dos contextos desportivos, como o futebol, e em outras perspetivas educacionais, tais como o contexto de Educação Física.

1.2 Objetivos da dissertação

Os objetivos da presente dissertação recaem em um grande tema: investigar os conceitos didáticos e pedagógicos do planeamento e a interação da implementação do planeamento a curto e longo prazo no contexto prático do futebol. Em específico, a dissertação divide-se em duas partes: (i) através de uma revisão narrativa, compreender quais são os pressupostos didáticos e

conceitos pedagógicos utilizados no contexto de Educação Física e do *coaching* que podem ser úteis na elaboração e implementação do planeamento no processo de treino; (ii) compreender as dificuldades e estratégias pedagógicas utilizadas por um treinador durante a implementação prática de um planeamento de curto e longo prazo em uma equipa sub-10 de futebol masculino.

1.3 Estrutura da dissertação

A dissertação que se apresenta foi estruturada de acordo com o modelo escandinavo, o qual pressupõe um conjunto de artigos submetidos em revistas com revisões entre pares. Dessa forma, esta dissertação apresenta-se em 4 capítulos.

O primeiro capítulo refere-se a uma introdução geral, onde apresenta uma breve introdução do assunto, sua pertinência e objetivos da dissertação. Além disso, o primeiro capítulo contém a apresentação da estrutura da dissertação. O segundo capítulo apresenta uma revisão narrativa submetida para publicação. O terceiro capítulo apresenta um artigo observacional submetido para publicação. Por último, o quarto capítulo é dedicado à síntese final, onde contém uma breve discussão geral com novas informações apresentadas na literatura, incluindo possíveis contributos dos resultados encontrados nos artigos apresentados na dissertação, as limitações do estudo e futuros desafios.

As referências bibliográficas do capítulo 1 (introdução) e 4 (síntese final) são apresentadas no final da dissertação. Por outro lado, as referências dos artigos submetidos estão apresentadas no final de cada artigo, respetivamente. Além disso, todas as referências seguem as normas e orientações para a redação e apresentação de dissertações da Faculdade de Desporto da Universidade do Porto. Por fim, o quadro 1 apresenta uma breve descrição de cada capítulo desta dissertação.

Quadro 1: Estrutura da dissertação

Capítulo I	Apresenta a introdução geral, os objetivos e a estrutura da dissertação.
Capítulo II	**Estudo I** **Parallels and divergences between coaching and Physical Education regarding planning: A narrative review** Objetivo: realizar uma revisão narrativa explorando paralelos e divergências entre as evidências disponíveis sobre o planeamento implementado nos contextos de Educação Física e do *coaching.* Artigo em revisão: Sports Coaching Review Autores: Maurício Facchini, José Afonso, Ana Ramos, Patrícia Coutinho, Fábio Yuzo Nakamura, Filipe Clemente, Isabel Mesquita & João Ribeiro.
Capítulo III	**Estudo II** **Exploring the interplay between short- and long-term planning in coaching a youth male soccer team: a case study.** Objetivo: Investigar a interação entre a implementação de um planeamento de curto e longo prazo em uma equipa sub-10 de futebol masculino. Em específico, realizar uma análise qualitativa do planeamento do treinador e correspondente elaboração e execução do planeamento a curto e longo prazo, e as perceções do treinador sobre o processo de treino. Artigo submetido: Sports Coaching Review. Autores: Maurício Facchini, José Afonso, Ana Ramos, Patrícia Coutinho, Fábio Yuzo Nakamura, Filipe Clemente, Isabel Mesquita & João Ribeiro.
Capítulo IV	Apresenta a síntese final, que envolve uma discussão geral, as limitações dos estudos e futuros desafios.

CAPÍTULO II

REVISÃO NARRATIVA

Parallels and divergences between coaching and Physical Education regarding planning: A narrative review

Maurício Facchini[1*], José Afonso[1], Ana Ramos[1], Patrícia Coutinho[1], Fábio Yuzo Nakamura[2,3], Filipe Manuel Clemente[4,5,6], Isabel Mesquita[1] & João Ribeiro[1].

1. Centre for Research, Education, Innovation, and Intervention in Sport ($CIFI_2D$), Faculty of Sport of the University of Porto, R. Dr. Placido Costa, 91, 4200-450 Porto, Portugal.

2. Research Center in Sports Sciences, Health Sciences and Human Development, (CIDESD), University of Maia, 4475-690, Maia, Portugal.

3. Escola Superior Desporto e Lazer, Instituto Politécnico de Viana do Castelo, R. Escola Industrial e Comercial de Nun'Álvares, 4900-347, Viana do Castelo, Portugal.

4. Instituto de Telecomunicações, Delegação de Covilhã, 1049-001, Lisboa, Portugal.

5. Research Center in Sports Performance, Recreation, Innovation and Technology (SPRINT), 4960-320 Melgaço, Portugal

Abstract

Planning is essential for the sound organisation of learning content in coaching and Physical Education contexts but depends on multiple and mutable circumstances in each context. Planning in Physical Education is usually more learning-based, while in coaching it is more performance-based. However, planning in coaching also relies on ongoing learning to support performance, and may learn from the educational perspective of planning in Physical Education. We reviewed the parallels and divergences between planning implemented in coaching and Physical Education contexts. Specifically, this narrative review discussed the main pedagogical goals of planning, the structures of planning in both contexts, as well as the opportunities, barriers, and remediation strategies in planning structures. Our review highlights the importance of adjusting planning structures in a flexible approach based on the ongoing assessment of learning and performance. Adopting this approach, coaches and teachers can design more appropriate tasks for short- and long-term planning.

Keywords: Coaching; planification; sports pedagogy; teaching-learning process.

1. Introduction

Coaching is a complex, dynamic, and goal-oriented process aimed at improving the athletes' or teams' performance (Cooke et al., 2023; Cooper & Allen, 2018). Physical Education (PE) contexts play a crucial role in enhancing students' physical and mental well-being while providing opportunities for them to learn and practice a wide range of sports skills (Celdrán-Rodríguez et al., 2016; Ennis, 2011). As any educational activity, coaching and PE contexts can be depicted as a positive transformation process of knowledge, attitudes, values, and skills between coaches/teachers and athletes/students. Thus, both contexts can be also considered a dynamic learning process (Rosado & Mesquita, 2011), where PE teachers and coaches can manipulate the design of learning tasks to promote ecological practices that optimise skill acquisition and performance development (Hodges & Lohse, 2022).

In coaching and PE contexts, planning is essential for a better organization of the learning contents (Feu et al., 2019; Scaglia et al., 2013). Planning involves the selection and sequential arrangement of themes and contents, from short- to long-term periods (Afonso & Mesquita, 2018). In coaching contexts, planning is usually performed in a periodised manner, i.e., *a priori* dividing a season or year into periods (Fisher & Csapo, 2021; González-Ravé et al., 2022). Although there is no consensus regarding the definition of periodisation, models are well documented in sports literature for its implementation (Kataoka et al., 2021). These predictive models organise the periods in a pre-defined order, with each plan focusing on a theme or subset of themes and load management (Afonso et al., 2020).

Nevertheless, from a practical viewpoint, planning depends on multiple and mutable circumstances in each context. For example, planning in PE classes is more based on learning, pedagogical goals in the annual curriculum, and assessment of students

learning (da Silva, 2022; Drewe, 2000). On the other hand, because of the inherent pressure of competitive contexts, planning in coaching is more focused on the principles aimed to maximise athletes' performance (DeWeese et al., 2015). Moreover, the distinctions between planning for learning and planning for performance may be somewhat arbitrary. Planning for learning in PE contexts expects the achievement of minimal performance goals, like students' fulfilment of the learning aims (e.g., task goals achievement) (Jørgensen Olsen & Mehus, 2022). Planning for performance in coaching largely relies on ongoing learning to support performance development (e.g., tactical-technical actions) (de Oliveira Castro et al., 2022; Roberts et al., 2020).

From this point of view, the teaching-learning process reveals also vital in coaching contexts (Greco et al., 2012; Renshaw et al., 2022), with coaches usually establishing general learning goals in the short- and long-term, but then outlining pedagogical strategies in the training plans to achieve such goals (Kinnerk et al., 2021; Thomas et al., 2021). Recently, the importance of pedagogical assumptions and learning methods in coaching contexts has been highlighted (see (Collins et al., 2023; Kuklick & Mills, 2023). In this sense, coaches should develop a breadth of pedagogical understanding across planning methods and learning design to shape their planning activities appropriately (Jones, 2006; Kirk et al., 2006). However, as planning in coaching contexts emerges heavily from a culture of performance (i.e., inherent pressure for performance) (Storm & Svendsen, 2022), planning in coaching may benefit from another educational perspective as PE contexts.

From this point of view, coaching and PE contexts might enhance their planning processes through the exchange of pedagogical assumptions, didactical concepts, and best practices between each other. Therefore, this narrative review explored the parallels and divergences between the available evidence of the planning implemented in coaching and

PE contexts. A narrative review provides a careful selection of the current literature to convey the key messages and produce a critical and reflexive perspective on the literature of the theme (Furley & Goldschmied, 2021). Specifically, this narrative review discussed: (i) the main pedagogical goals of planning in both sports contexts; (ii) structures of planning in both sports contexts; and (iii) barriers, opportunities, and remediation strategies in planning structures. Overall, this review may facilitate further progression and an in-depth understanding of the teaching planning models in sports coaching and PE contexts, which may provide helpful insights potentially translatable to practical contexts.

2. Main pedagogical goals of planning in coaching and PE contexts

The main pedagogical goals inherent to planning in PE and coaching contexts aim to stimulate a physically active lifestyle in children and gradually improve their sports skills (Cloes, 2017; Ennis, 2011; Felfe et al., 2016). Regarding sports skills, the pedagogical goals of coaching and PE contexts involve specific contents depending on the nature and features of each sport, but from a general viewpoint the development of the physical, technical, tactical, and mental skills is embraced (Nikšić et al., 2019; Piedra et al., 2021). These skills are the foundation for the practice of more complex motor activities (Sortwell et al., 2021). For instance, in soccer contexts, coaches teach the specific tactical principles of play (e.g., Offensive Coverage), which comprise a set of basic game rules that guide the players' actions to facilitate the organisation and space management during a soccer game (Garganta, 1997). Thereby, the development of tactical principles allow players to produce effective solutions for emerging game problems (Petiot et al., 2021; Ribeiro et al., 2019).

Moreover, coaching and PE contexts can promote additional pedagogical goals such as the development of psychological skills (e.g., autonomy, competence, and

motivation) (Cronin et al., 2019; Hernando-Garijo et al., 2021) and psychosocial skills (e.g., leadership, citizenship, and integrity) (Laker, 2000; Opstoel et al., 2020). The development of psychological, social, and personal skills is highly valuable because (hopefully) it helps children becoming successful learners and more successfully transition to adult life (Wright & Craig, 2011). A plausible reason is that through sports participation children learn how to solve problems autonomously, lead, and work as a team (Choi et al., 2014; Opstoel et al., 2020). For example, for stimulating autonomy and creative skills, coaches and teachers can formulate game-problems through the design of learning tasks, where learners are invited to explore and discover possible solutions by themselves. These practices promote self-regulated learning, i.e., the learners enhance skills to control their cognitions, emotions, behaviours, and decrease coach dependency (Ribeiro et al., 2021; Zimmerman & Schunk, 2011).

The pedagogical goals of planning in coaching and PE can be influenced by the age, gender, and skill levels of the learners (Cobley et al., 2009; Guimarães et al., 2019). To create fair competition and to provide suitable learning environments for the learners, coaching and PE contexts are generally structured by chronological age, i.e., children of the same born-year learning level study or train together (Peña-González et al., 2018). The idea is to classify the contents of the class/training by age, where all children will learn the same pre-determined contents each year and will progress grade by grade (Ramírez & Vega, 2018). Yet, although the similar age, children's maturity status (biological maturation) may differ considerably, which consequently affect their performance levels (Torres-Unda et al., 2016). Even in children with similar ages and levels of maturity, the performance levels can vary for several reasons such as learning, quality of training, and training experience (Guimarães et al., 2019; Peña-González et al., 2018).

Different contexts may require different pedagogical goals. For example, PE teachers are more focused on the students having experience in different sports and developing their skills throughout the school curriculum (Farias et al., 2018). Moreover, PE teachers are further concerned that students learn meaningful contents that could be applied in their everyday lives (Quennerstedt, 2019). Similarly, coaches in coaching contexts aim to design meaningful practices for athletes enhancing their interest in the game (Memmert & Konig, 2007). Still, because of the inherent pressure to achieve relevant competitive results, coaching contexts mainly target improving sports performance, following a product-oriented perspective (Ramos et al., 2021). For this reason, coaches are heavily focused on planning exercises to develop the skills of the athletes in a specific sport (e.g., basketball) (Cañadas et al., 2018).

In coaching contexts, athletes are often more motivated to practice and learn the sports than in PE classes, where students' engagement and participation can differ significantly (Munk & Agergaard, 2015). One possible reason for this difference is that students who have previous experience in sports outside of school may be more motivated to participate in PE class than those who are meeting the activity for the first time (Kirk, 2005). Thereby, PE contexts involve more heterogeneous groups while sports coaching usually has more homogeneity among the athletes (e.g., in motivation, sporting experience, and skills levels) (Storm & Svendsen, 2022). These differences between sports contexts may require different planning structures, demanding tailor-made plans that effectively stimulate the desired pedagogical goals. The subsequent section will explore the planning structures in both contexts in detail.

3. Planning structures in coaching and PE contexts

3.1. Planning for the longer temporal scales

Traditionally, planning in PE contexts serves to pre-define the pedagogical periods and their sequence for the entire school year (i.e., annual planning) (Metzler, 2017; Ramírez & Vega, 2018). These periods are usually organised in didactic or thematic units (e.g., basketball, volleyball) (Feu et al., 2019; Ramírez & Vega, 2018). Thematic units are a series of lesson plans, sequenced to present a comprehensive program of instruction that help the teachers to coordinate between the annual curricular contents and periods (Vickers, 1990). The organisation of thematic units is often arranged on the pedagogical goals of the curriculum as well as to fit the multiple PE classes in available school facilities (da Silva et al., 2021; Rosário & Darido, 2005). For instance, PE teachers design an annual plan with six thematic units based on available school facilities, where each unit (e.g., volleyball) can be composed of a predetermined number of lesson plans (e.g., 8).

In coaching contexts, coaches often begin the planning process by creating annual overview to guide the training process (Kataoka et al., 2021). Generally, planning is divided into three temporal scales: macrocycle (months to a year or more), mesocycle (weeks to months), and micro-cycle (days to weeks) (Kataoka et al., 2021). These temporal scales are organised in an approximate timeline for various types of phases (e.g., preparation, competition, taper) (DeWeese et al., 2015) as well as specific sports content (e.g., defensive and offensive organisation) (Cañadas et al., 2018). Within planning, coaches often use the periodisation models to design training cycles (Mujika et al., 2018). Periodisation can be described as a purposeful sequence of different training units and phases, systematically planned in short- to long-term training programs, so that athletes attain the desired performance and reach planned results (Issurin, 2010; Mujika et al., 2018). The order of these phases, and how long each phase will last is usually based on the competitive schedule (DeWeese et al., 2015). For example, in the macrocycle (e.g.,

annual season), the preparation phase (i.e., before the competition) can last about 2 months, the competition phase is around 9 months, and the transition phase (i.e., after the competition) can last 1 month.

Annual planning and periodisation deliver a sense of organisation, but it is unlikely that they perfectly fit the learning process, since learning rates may differ considerably over time (Afonso & Mesquita, 2018; Raviv et al., 2022), partly due to the large intra- and inter-variability in athletes' response to training stimuli (Bell et al., 2022; Kiely, 2018). Thereby, the time needed to acquire skills will differ among learners (i.e., inter-variability), and even for the same learner over time (i.e., intra-variability) (Raviv et al., 2022; Riley & Turvey, 2002). Therefore, predicting the results of any learning process, concerning their magnitude, and timing, is a challenging task (Afonso et al., 2019; Loureiro et al., 2023). Given this non-linear nature of learning, planning structures can be designed from a flexible perspective. For instance, if the teacher perceives that the student acquired the content (e.g., a spike in the volleyball) faster than expected, the teacher can *(re)*design the plans to go further in the learning content or advance to the next thematic unit.

3.2. Planning for the shorter temporal scales

Coaches and PE teachers can support their pedagogical intervention in the short- and long-term based on the ongoing assessment of learning and performance (e.g., pre-determined moments of evaluation), which can inform on the actual needs of learners (Coutinho et al., 2023; Loureiro et al., 2022). In a practical example, soccer coaches can design their short-term planning (e.g., micro-cycles) by evaluating their previous game for identifying possible areas of improvement to prepare the team for the next game. Such bi-directional feedback between assessment and planning allows sports practitioners to

design appropriate learning environments. The appropriateness framework emerges as a pedagogical concept that intends to help sports practitioners to plan and structure meaningful learning environments (Ramos et al., 2022). Meaningful learning occurs when the athlete can understand and connect to what is to be taught as well as organise it into a coherent structure, and integrate it with other knowledge (Beni et al., 2017; Mayer, 2004).

Based on the continuous learning and performance assessment, coaches and PE teachers can design the most appropriate training programs for each specific phase of the season or period of the school curriculum. Additionally, within each phase of training, different programming strategies can be used by coaches (Afonso et al., 2020). Programming refers to the micro-planning with more details of plans to achieve the learning targets (Afonso et al., 2020). Furthermore, programming enables learning opportunities to be recognised and allows the coaches and teachers to adapt the plans as soon as they realize that the proposed learning tasks do not meet the desired performance outcomes (Jarvis et al., 2017; Mees et al., 2020). For instance, when teaching volleyball, if coaches/teachers notice that learners are struggling with serving accuracy, they can modify the learning task by using a lower net height or introducing a larger target area.

Regarding the micro-scale plannings, coaching and PE plans are often organised in a similar structure: an introduction part (warm-up), a main part, and a final part (calm-down) (Gil et al., 2019; Larsson & Karlefors, 2015). The initial part often serves to introduce the pedagogical goals for the learners and prepare them for the main part of the class/training (Ali et al., 2014; Gil et al., 2019). Additionally, the initial part can be designed to develop the technical skills of the students/athletes (Garganta et al., 2013). In the main part of the PE class or training, coaches and teachers apply the learning tasks built to address the goals set and satisfy learners' needs (Chen, 2013; Coutinho et al.,

2015). According to learners´ response, coaches and PE teachers could ongoingly manipulate key task constraints (e.g., field dimensions, game rules, etc.) to provide action opportunities for learners develop novel and adaptable skills (Davids et al., 2017; Larkin et al., 2022).

The final part of the session is often used to further strengthen learners' comprehension of the goals of the class/training (Chen, 2013). In addition, it serves for learners to cool-down, but this concept has been questioned recently in the literature (Van Hooren & Peake, 2018) and an in-depth discussion is beyond the scope of our review. Afar from strengthening learners' understanding of the goals of the class/training, coaches and PE teachers could use the final part of the session to evaluate the learning of the students/athletes (Jarvis et al., 2017). For instance, coaches and teachers could use a formal (or conditional) game-form to assess the learners' competencies in performing the tactical-technical actions. Afterwards, the assessment information can be used to guide the planning of next practice (Jarvis et al., 2017; Roy et al., 2018).

3.3. Linking short and long temporal scales

Commonly, long-term planning guides the elaboration of short-term plans. Yet, long-term planning often needs to be adapted in reason of the unpredictable constraints that emerge in short-term planning (Afonso & Mesquita, 2018). For example, the learners' unpredictable and non-linear learning development (MacPhail et al., 2008; Raviv et al., 2022) may affect the progression of the content planned in the long term. In the short term, the time spent in transitioning between activities, and learners' execution of the task can demand changes in the planning during its implementation (Fraser-Thomas & Beaudoin, 2002; Sáenz-López et al., 2011).

Given the uncertainty of both contexts, typically the planning is not implemented as expected. To optimise plan implementation, coaches and PE teachers should be flexible and capable of *(re)* adjusting their plans (Mees et al., 2020; Shaw, 2017). This expertise involves understanding the characteristics and skill levels of learners, as well as the features of each learning context (Cushion et al., 2003; Mees et al., 2020). Moreover, coaching expertise can be related to the precise alignment between the initial planning intentions, the adaptations made during implementation, and the actual occurrences in practice (Collins et al., 2022). For this reason, PE teachers need a basic knowledge of multiple sports to teach the entire PE curriculum while coaches require advanced knowledge in a specific sport. Without this broad (and deep) understanding of sports modalities, coaches and PE teachers may struggle to identify when and how to modify planned tasks to effectively teach the desired content (Morgan & Hansen, 2008; Wilson et al., 2010).

Overall, planning is a multifaceted and complex process that demands the coaches and PE teachers to make numerous pedagogical choices (Kinnerk et al., 2021). In both contexts, the short- and long-term planning could be based on continuous assessment of learners' learning and performance (Loureiro et al., 2022). Moreover, a flexible bi-directional relation between long-term and short-term planning is essential to cater for learners' response (Afonso et al., 2023). However, the implementation of both short- and long-term planning may face challenges and barriers during its process, which will be discuss next along with potential remediation strategies.

4. Opportunities, barriers, and remediation strategies in planning structures

The unpredictability in performance of learners provides opportunities for coaches and PE teachers to modify task design based on the learners' performance (Larkin et al.,

2022; Nash & Taylor, 2021). For instance, if athletes surpass the coach expectations and demonstrate superior performances than expected, new learning opportunities may emerge during the planning process. Hence, coaches and teachers could plan their practical sessions according to the emergent demands of learning process (see (Loureiro et al., 2023)).

Planning based on the current demand of the teaching and coaching process also offers opportunities for coaches and teachers design learning activities that cater to individual skill levels, moving away from a ‘one size fits all’ approach (Amorose, 2007). Thereby, coaches and PE teachers can tailor exercises and activities to each group's needs, providing appropriate challenges and promoting individual progress (Hastie et al., 2011; Hodges & Lohse, 2022). In a basketball example, coaches and teachers can divide students into groups based on their shooting abilities, such as beginner, intermediate, and advanced. Each group can then engage in targeted drills that align with their respective skill levels, allowing for more personalised instruction and improvement.

However, the varying levels of motivation, skills, and learning pace within learner groups can pose significant challenges for coaches and PE teachers when planning their activities (Blumenfeld et al., 2006; Renshaw et al., 2010). In this sense, a remediation planning strategy to deal with these differences may involve dividing the learners into groups, enabling that coaches and teachers use more appropriate instruction for each individual or group (Dixon et al., 2014). Alternatively, there are moments in the training or class where learners need to play together (i.e., tasks involving all players). This is important for them to become familiar with their teammates' characteristics and promote collective dynamics (Mathieu et al., 2008; Ribeiro et al., 2019). A remediation planning strategy to overcome the heterogeneity barrier in collective tasks may involve balancing

the team based on players' skill levels. For instance, coaches can organise sport teams in which the best-attacking players are matched up against the best-defender players.

From this point of view, the learners' groups (determined based on pre-defined skill levels) can be flexible and may change over time as learning progress. For overcoming that barrier, another important remediation strategy is the ongoing assessment of each student's physical abilities, skills, and knowledge. In coaching contexts, this assessment is typically conducted through regular training sessions and/or official competition games (Bellenger et al., 2016; Sanchez-Sanchez et al., 2019). Yet, in the context of PE official weekly competition games are often absent. For this reason, PE teachers should establish a structured and ongoing assessment framework within the annual plan. Through continuous assessment, coaches and teachers can identify the specific areas where each learner requires distinct remediation support (Ribeiro et al., 2023; Yan & Yang, 2021).

Moreover, one of the main barriers in both contexts is the need to organise the learning tasks and, at the same time, control the learners' behaviours and performance in those tasks (DeCorby et al., 2005; Sáenz-López et al., 2011). Thereby, planning may not be implemented overall since the coaches or teachers may not be able to control the timely execution of the tasks (Sáenz-López et al., 2011). A possible remediation strategy to optimise the timely execution of the tasks may involve planning the classes or training plans with appropriate timeframes, allowing time for transitions and breaks, also keeping students engaged through an adequate class structure (Metzler, 2017).

Regarding the short-term and long-term planning, PE contexts can get some valuable remediation planning insights from the coaching contexts. For instance, coaches can design alternative routes into the training plans to adapt easier to the unpredictable constraints that emerge in sports practice as regulated improvisation (as referred by

(Cushion et al., 2003)). Transferring to PE contexts, teachers can plan simple variants in the tasks in case of one or two students missed the class (e.g., a new game format with a different number of players). Additionally, PE teachers can design alternative rules for the tasks in case of they will be easier or harder in practice than they planned.

5. Practical implications: what can coaching and PE contexts learn from each other regarding planning?

Given the heterogeneity of PE contexts, PE teachers are often required to plan lessons that accommodate students with a wide range of abilities, interests, and skill levels. Therefore, coaching contexts can learn from PE contexts how to adopt a more accommodating planning approach for athletes with different motivations and skill levels. This approach focuses on adapting the tasks and tailor-made the support for the emergent needs of each athlete. For instance, like PE contexts, coaches can manage task complexity and difficulty so that the athletes can progress over the season. Also, coaches can provide more support (e.g., additional feedback) to athletes who present more difficulty in the execution of tasks.

On the other hand, PE contexts can learn valuable lessons from coaching contexts, especially when it comes to implementing planning strategies for short- to long-term remediation. Thereby, PE teachers can incorporate alternative routes into their lesson plans to better manage unpredictable circumstances. Furthermore, PE teachers can use nested planning (as described by (Collins et al., 2016)). Nested planning considers the needs of athletes and the context in the long-term planning of mesocycles, and the steps necessary to achieve the intended outcomes (Martindale & Collins, 2005). Next, coaches and PE teachers can plan the activities in micro-cycles (e.g., week by week) where it is nested within the broader meso- and macro-scale (Collins et al., 2016).

6. Limitations

Due to the large number of studies conducted on coaching and PE contexts, it becomes challenging to conduct an extensive and comprehensive analysis of all the available literature. Therefore, it is possible that potentially relevant topics may have been left out. Furthermore, to gain a profound understanding of the theoretical examples and facilitate the transfer of pedagogical assumptions between both contexts, further theoretical and practical research is required.

7. Conclusions

This review highlighted the parallels and divergences between coaching and PE contexts regarding planning. Specifically, PE contexts display greater heterogeneity between students in motivation, skill levels, and sporting experience than athletes in coaching. It also emphasises planning for teaching a wide range of sports, while coaching is focused more on developing athletes' performance in a particular sport. However, it is important to note that the development of athletes' performance also relies on learning. The parallel between the two contexts emerges from the need for careful planning of goals and tasks in the short- and long-term to design appropriate learning environments. This viewpoint suggests the importance of adjusting planning structures in a more flexible fashion according to the non-linear nature of the learning process. On the macro-scale, both contexts can support their pedagogical intervention based on the ongoing assessment of the learners' learning and performance. On the micro-scale, coaches and teachers can implement tailor-made pedagogical strategies to cater to the specific needs of learners according to the emergent demands of the coaching and teaching process.

Funding

This Project was supported by the Foundation for Science and Technology (FCT, Portugal), under Grant EXPL/CED-EDG/0246/2021.

Competing interests

The authors have no competing interests to declare.

Availability of data, code, and other materials

Not applicable.

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CAPÍTULO III

ARTIGO EXPERIMENTAL

Exploring the interplay between short- and long-term planning in coaching a youth male soccer team: a case study.

Maurício Facchini[1], José Afonso[1], Ana Ramos[1], Patrícia Coutinho[1], Fábio Yuzo Nakamura[2], Filipe Manuel Clemente[3,4,5]Isabel Mesquita[1] & João Ribeiro[1].

1. Centre for Research, Education, Innovation, and Intervention in Sport ($CIFI_2D$), Faculty of Sport of the University of Porto, R. Dr. Placido Costa, 91, 4200-450 Porto, Portugal.
2. Research Center in Sports Sciences, Health Sciences and Human Development, (CIDESD), University of Maia, 4475-690, Maia, Portugal.
3. Escola Superior Desporto e Lazer, Instituto Politécnico de Viana do Castelo, R. Escola Industrial e Comercial de Nun'Álvares, 4900-347, Viana do Castelo, Portugal.
4. Instituto de Telecomunicações, Delegação de Covilhã, 1049-001, Lisboa, Portugal.
5. Research Center in Sports Performance, Recreation, Innovation and Technology (SPRINT), 4960-320 Melgaço, Portugal

Abstract

This qualitative case study explored the interplay between the implementation of short and long-term planning in a male youth soccer team. One coach and twelve players participated in this study over eight consecutive weeks. The first author assumed the dual role of researcher and head coach, collecting data through documented coach planning, field notes, and reflexive diary. Data was examined through thematic analysis, which emerged three major themes: (1) changes in short-term planning due to intrinsic factors; (2) adaptations in short-term planning due to extrinsic factors; (3) consequences of the interplay between short- and long-term planning goals in the macrocycle. Findings highlighted that the interplay in the training plans was due to multi-directional effects emerging from micro and macro scales. Initially, the tactical principles of play guided long-term planning and shaped short-term planning. However, short-term constraints influenced the implementation of short-term planning, requiring the coach to adjust the long-term planning.

Keywords: Coaching; planification; qualitative approach; soccer; sports pedagogy.

Introduction

The training process includes systematic and organised exercises aiming to develop the physical, mental, and technical-tactical skills of players (Piedra et al., 2021). This requires the interaction between planning, assessment, interpretation of information collected, and the continuous readjustment of training plans (Duggan et al., 2021; West et al., 2021). Planning emerges from stipulating over-arching goals to more detailed outlines, and involves the selection of themes and contents, in (more) fixed or variable timelines (Afonso & Mesquita, 2018; Suchomel et al., 2018). In sports, there is short-term planning, which is primarily focused on individual session plans and micro-cycles, and long-term planning which considers the periodisation of the season (Kinnerk et al., 2021; Lyle, 2010).

Within planning, periodisation emerges as a theoretical/practical approach attempting to help coaches delineate strategies and design training sessions in the short- and long-term (Kinnerk et al., 2021; Mujika et al., 2018). Commonly, periodisation is organised into three stages or temporal scales: the macrocycle (several months to a year or more), the mesocycle (2–6 weeks), and the micro-cycle (days to 2 weeks) (Kataoka et al., 2021; Mujika et al., 2018). From this perspective, across successive training (micro) cycles, training periodisation will progress from general to specific adaptations to maximise performance at competition time (Kataoka et al., 2021; Pass et al., 2022).

However, team sports are complex and dynamic systems, composed of many interacting elements (i.e., players) exhibiting non-linear and co-adaptive behaviours with the environment (Araújo & Davids, 2016; Pol et al., 2020). Given these features, a single training session can induce different players' responses and/or divergent responses in the same team over time (Loureiro et al., 2022; Strogatz, 2018). Consequently, athletes usually exhibit huge variability in training stimulus adaptations, which makes it hard for

coaches to predict how the athlete will respond to training in the short- and long-term (Bell et al., 2022; Kiely, 2018). Therefore, long-term planning might be a challenging task in team sports, since coaches cannot control the complex inter- and intraindividual variations of training stimulus (Afonso & Mesquita, 2018).

In the practical contexts of soccer, planning is often largely dictated throughout each game week (e.g., short-term planning) (Bjørndal & Ronglan, 2021), where coaches develop daily plans and integrate them into a weekly structure that enables players practice at an appropriate level (Walker & Hawkins, 2018). Nevertheless, even within weekly planning, the coaches' training plans could be affected by several unpredictable variables emerging from the contexts (e.g., players' absence per injury) or the players (e.g., players' psychological stress) (Favero & White, 2018). Therefore, training plans can be precious guides for coaches, but they must also possess the flexibility to accommodate necessary adjustments to the practice routine (Loureiro et al., 2023).

From this point of view, the complexity of planning unfolds in the constant interplay between what was planned for the long-term and the constraints acting on short-term planning (Afonso & Mesquita, 2018; Pass et al., 2022). Thereby, one of the biggest challenges for coaches involves the design and implementation of short- to long-term planning (Mujika et al., 2018), articulating these two timeframes and intertwining them into an ongoing dialogue. To promote such interplay, coaches might use different strategies to deal with these challenges. On the one hand, some coaches prefer to design improvisation routes in the training plans, such as regulated improvisation (as referred by Cushion et al. (2003)). On the other hand, other coaches follow a general plan that they can adapt easily during practice according to players' needs and responses to the task goals set (Bjørndal & Ronglan, 2021).

Interestingly, to date, there is little published empirical data based on how coaches manage the interactions between short- to long-term planning in soccer teams (e.g., Pass et al. (2022)), and undoubtedly there is a need for more research emerging from the real training context (Afonso & Mesquita, 2018). Case studies can provide new insights into the current literature and to sports coaches in practice since it is a rich source of real-life data (Yin, 2011) where each context may provide specific challenges and possible strategies to manage them. Additionally, a qualitative approach allows the researchers to comprehensively explore the reality around a context (Phothongsunan, 2010), and is well-suited for cases studies (Baxter & Jack, 2008).

Therefore, this study aimed to investigate the interplay between the implementation of short- and long-term planning in a male youth soccer team throughout eight consecutive weeks. Specifically, we aimed to conduct a qualitative investigation of the coach's planning, the corresponding execution of the planning, and the coach's perceptions about the coaching process. Then, we intended to explore how the coach manages the unpredictable factors that emerge during the implementation of short-term and long-term planning. Utmost, it was not our intention to generalise results but to offer conclusions that serve as guidelines to support the pedagogical intervention in coaching practices (Jones et al., 2012). Instead, we expected to contribute for a deeper understanding of this complex dialogue between coaching and planning in sports by presenting and discussing data in the context of youth soccer.

Method

Study design

A case study was conducted since it allows the researcher to explore a particular phenomenon over time, through detailed and in-depth data collection about a real-life

case (Yin, 2011). In this investigation, the case study was used to get new insights into the complex interplay between short- and long-term planning in real practice contexts and then contribute to improving a general understanding of this topic.

Aligned with the purposes of the study, it was adopted a qualitative approach framed upon an interpretative paradigm (Phothongsunan, 2010). The qualitative approach allows exploring the researcher's understanding and interpretation of the reality around him, whereby, within this study, we assumed that this reality is subjective and dynamic, with the knowledge being socially constructed (Phothongsunan, 2010). The interpretative paradigm can offer an exclusive standpoint from a particular coaching context as well as investigate how multiple factors may influence the planning, therefore providing a deeper understanding of coaches' feelings, thoughts, and beliefs (Kinnerk et al., 2021).

The intervention was elaborated on short- and long-term planning composed of 16 training sessions, implemented over two months (figure 1). The specific eight-week period was chosen based on logistical convenience for the implementation of the planning. Given the nature of this study and considering the need to establish ongoing and bidirectional links between the planning and assessment of the coaching process (Loureiro et al., 2022), every aspect of planning could potentially be subject to changes. Therefore, as the process unfolded, small-to-large deviations to the initial plans could occur. The magnitude of unfolding changes, the reasons supporting them, and their consequences were the focus of our qualitative investigation.

The study was approved by the Ethics Committee of the Faculty of Sport of the University of Porto (CEFADE_45_2022).

Month 1								Month 2							
Week 1		Week 2		Week 3		Week 4		Week 5		Week 6		Week 7		Week 8	
Training sessions		Training sessions		Training sessions		Training sessions		Training sessions		Training sessions		Training sessions		Training sessions	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
75 min	60 min	75 min	60 min	75 min	60 min	75 min	60 min	75 min	60 min	75 min	60 min	75 min	60 min	75 min	60 min

Figure 1. Planning intervention

Context and participants

The study was conducted on the U-10 male soccer team at the local club situated in northern Portugal. Purposive and convenience sampling criteria (Sarstedt et al., 2018) were applied to select the 12 male youth soccer players. This criterion was used because the participants were already training under the guidance of the head coach (and first author). Most players were aged between 9 and 10 years old and hold at least one year of practice experience and formal competition. The team competed in the championship belonging to the regional soccer association and played the 7-a-side game format. This game format consists of each team playing with seven players including a goalkeeper. The rules of the 7-a-side game format follow the official rules of the 11-a-side soccer game format, except that there is no offside rule, and each team may substitute the players freely. The official games last 50 minutes divided into two halves of 25 minutes.

The goals, methods, and logistical implications of the study were explained to the club's director and the players' legal tutors. Moreover, the head coach (and first author) informed the players about the nature of the project and its pedagogical procedures. In addition, it was clarified to players that participation was strictly voluntary, and they could withdraw at any time. All parents and players signed the informed consent forms. Data was collected from both the club and the coach. No personal data was collected from

players. Also, the data collection did not interfere with the normal activities of the club. Therefore, there were no additional risks to the players beyond the common practice of soccer.

The position and role of coach-researcher

The head coach involved in this case study was finishing the UEFA Coaching License Level I (UEFA C). In addition, he had more than seven years of coaching experience; nevertheless, as a head-coach, he had only one year of experience. The head-coach was also attending the master's degree in Sports Training – Youth Training at the Faculty of Sports of the University of Porto. For this reason, the first author assumed a dual role of researcher and the head-coach responsible for implementing the planning and documenting the short- and long-term changes that occurred over eight weeks. This study provided an excellent opportunity for self-evaluation of his coaching and planning processes (as described in other studies (Jones et al., 2007; Ramos et al., 2022)).

Pedagogical Contents of Coaching

The contents of planning encompassed the tactical principles of play of the soccer game (da Costa et al., 2009; Garganta, 1997). Essentially, these principles comprise a set of basic game rules that guide the players' actions to facilitate the organisation and space management in the offensive and defensive phases of the game (Garganta, 1997). The tactical principles of play are synthesised in table 1 according to Garganta et al. (2013).

The training plans should sought to develop adaptive performers, capable of searching, exploring, and refining a manifold of performance solutions, which would allow them to successfully comply with the principles of play in different contexts (Ribeiro et al., 2019). Thereby, during each training session, the head coach tried to

develop the principles of play in an open and flexible manner. The coaching of the tactical principles of play should be planned consistently, according to the capabilities of the players to learn new content (Práxedes et al., 2018; Ribeiro et al., 2021).

Table 1. The tactical principles of the soccer game (Retrieved from Garganta et al. (2013)).

Fundamental principles	i) to not allow numerical inferiority. ii) to avoid numerical equality. iii) to privilege numerical superiority.	
Specific/Cultural Principles	**Offensive (with ball)**	**Defensive (without ball)**
	Penetration: Reduce the distance between the ball carrier and the opponents' goal or goal line. Directly attack the opponent or the goal. Create advantageous attacking situations in numerical and spatial terms. Unbalance opponent's defensive organisation.	**Delay:** Stop or delay the opponent's attack. Provide more time for defensive organisation. Reduce pass options to other opponents. Constrain the progress of the ball carrier. Prevent shooting on own team's goal.
	Offensive Coverage: Support the ball carrier by offering options for the sequence of the game. Unbalance the opponent's defensive organisation. Decrease opponents' pressure on the player in possession of the ball. Create numerical superiority, especially in the centre of play. Ensure maintenance of ball possession.	**Defensive Coverage:** Serve as a new obstacle to the ball carrier if he/she overtakes the first defender. Transmit security and confidence to the first defender to support his/her initiative of blocking the offensive actions of the player carrier.
	Mobility: Create disruptive actions in the opposing defensive organisation. Occupy favourable spaces to obtaining the goal. Create in-depth passing options.	**Balance:** Ensure defensive stability in ball dispute zones. Support teammates who perform actions of delay and defensive coverage. Reduce passing lines to opponents and mark potential players who could receive the ball.
	Space: Enlarge the effective playing space. Expand the interpersonal distances between opponents. Make marking difficult for the opponents. Facilitate the offensive actions of the team in possession of the ball.	**Concentration:** To reduce the effective playing area of the opposing team. Increase protection of the goal. Drive opponent's offensive play towards safer areas.

Data collection

The data collection was based on the coach's planning, field notes (FN), and a reflective diary (RD). FN are an essential component of qualitative research because they can help in the construction of deep, thick, and rich descriptions of the study context (Phillippi & Lauderdale, 2018). The head-coach wrote the FN after the training sessions about the events that emerge during practice (e.g., how they happened, barriers, strategies, etc.) to further analyse the coaching process. Furthermore, the FN guided the first author in writing the RD. The RD helped the coach-researcher think critically about the critical events in training, reflecting and self-evaluating his coaching and planning process (Ramos et al., 2020).

The deviations in the planning implemented in practice (i.e., if the time allocated to a certain subject in the plan reflects what happened in the training) were thoroughly registered. Also, the rationale behind those changes (i.e., why was necessary to change the plan), as well as their outcomes, were the focus of data collection.

Data analysis

Data analysis followed an inductive perspective (Soiferman, 2010). This perspective, typical of the interpretative paradigm, is useful when the investigation aims to carefully observe a particular context, and then discuss the data collected and provide new insights into the current literature. Thematic analysis (Braun & Clarke, 2012) was used to analyse the data from training plans, RD, and FN. The thematic analysis was chosen because it enables the researcher to identify, analyse, and report the themes within the extensive data set (Braun & Clarke, 2012). As recommended by Braun and Clarke (2019) we followed the six-stage model for conducting thematic analysis: (i) familiarizing ourselves with data; (ii) analysing and generating initial codes; (iii) searching for themes;

(iv) reviewing initial themes and codes; (v) defining themes and its relations and meanings; (vi) producing the results through a narrative. In the last stage, we intended to develop some introspection through the coach's perspectives written in RD about the issues in planning over the eight weeks. In this sense, data analysis was not categorised to fit the theory but to search for patterns and understand how they might support or oppose current theories in coaching contexts.

Trustworthiness

To ensure data trustworthiness, three additional procedures were undertaken. First, a data triangulation method (Denzin, 2012) was used to collect the data from different sources (i.e., coach's plans, FN, and RD). In this vein, a Microsoft Excel datasheet was created to register the data information collected through the coach's plans, FN, and RD. Second, themes and subthemes were presented to the research team for validation. In this phase, all data was reviewed and reflected critically by the research team, in that they changed, deleted, merged, or updated regularly through the data analysis process. Third, throughout the data analysis process, regular research team meetings were organised to minimise individual research bias in the interpretational data analysis (Patton, 2014).

Moreover, despite the benefits of the coach-researcher role in a qualitative investigation, it is important to acknowledge the potential risk of data bias when combining the roles of researcher and head coach, where the researcher and head coach need to maintain a balanced perspective during the collection, analysis, and discussion of the data (Dwyer & Buckle, 2009). Thereby, the data was also critically reviewed by the remaining authors of the study, allowing them to raise concerns and avoid any form of data manipulation or bias in the analysis.

Results

Three major themes were developed through the analysis of the data: (1) changes in short-term planning due to intrinsic factors (e.g., response to the proposed drills); (2) adaptations in short-term planning due to extrinsic factors (e.g., absence of the players in the training); (3) consequences of the interplay between short- and long-term planning goals in the macrocycle.

Changes in short-term planning due to intrinsic factors

In short-term planning, whenever possible, the coach designed the same exercise for all players and organised teams based on players' skill levels. For example, the player who had the best attacking skills played against the player who had the best defensive skills. However, even adopting this approach, during the implementation of the training plans the coach needed to adjust the restrictions of the task based on each player needs. For instance, in an exercise focusing on 1vs.1, if the coach felt that the player with the ball was having difficulty in overpassing the defender, the coach would instruct the defending player to perform passive defence – delay. Thereby, the coach tried to cater to each player's specific requirements within the same exercise framework. The following excerpt support this situation:

> "For today's training, I planned tasks to develop the defensive and offensive tactical principles of Penetration and Delay. In this way, the first task was designed on several mini fields to play 1vs.1 based on players' skills levels, where the players sought to dribble past the opponent (i.e., offensive tactical principle of penetration) and carry the ball through the bottom line, while the opponent tried to stop the attack (i.e., defensive tactical principle of delay)." *Training session 3, RD*

From this perspective, the process of short-term planning implementation was highly dependent on intrinsic factors such as players' performance in the tasks. Thereby,

when deemed necessary, the coach adjusted the task constraints (e.g., game rules, field size, complexity, and difficulty levels) to promote appropriate game scenarios for the player and for the team. For example, the coach designed a task to stimulate players to create in-depth passing options and to occupy favourable spaces on the field to score a goal (principle of Mobility), thus increasing the number of goal-scoring opportunities with the attacking team in numerical superiority (3vs.2 +Gk). This context generated a situation where an attacking player was "free" from any defenders – with time and space. However, during the task, the coach felt that the attacking team were having difficulty because the quality of defence was overpassing the numerical superiority of the attacking team. Thereby, the coach thought that adding one more attacking player (i.e., increasing the numerical advantage - (4vs.2+Gk)), would decrease the level of difficulty (although increasing game complexity due to the increase in the number of players), creating a suitable context for the attacking players to succeed. In this example, the coach adjusted the task for the players to be able to achieve the training goal planned in the short-term. The following excerpt supports this idea:

> "The objective of today's training was to coach the specific tactical principles of Balance and Mobility. The tasks went well without the need for many pauses for tactical corrections. For the final part of the training, I designed a task in the format of 3vs.2+Gk to focus on the tactical principle of Mobility, and to increase goal-scoring opportunities. However, the attacking players were having lots of difficulties in scoring, so I added one more attacking player (4vs.2+Gk) to allow more scoring opportunities." *Training session 12, RD*.

Furthermore, there were occasions when the coach was positively impressed by the players' performance in a specific task and decided to extend the duration of the task, allowing them to play and have fun. For example, during a task of Gk+4vs.6, the players were performing the tactical principles well. So, the coach preferred to extend the time (5

minutes) of the second set more than planned. However, due to the coaching decision, the time available for practicing the other task was impacted. For example, a task involving shooting on goal to entertain the players and improve their scoring ability had to be shortened. Thus, in the short-term, the coach was unable to implement all the originally planned learning tasks. This situation was emphasised after the training number 16:

> "In the second task, we trained the offensive coverage in the format of Gk+4vs.6 (one player was missing). I added a rule to the task: the attacking team could only enter the opponent's area if they successfully passed the ball through four 'portals' placed in the opponents' goal area. This game rule was created to encourage players to support the player in possession of the ball, providing solutions to give sequence to the play, until they found an opportunity to pass the ball through one of the open portals. Initially, the players felt some difficulties, but then they found the solutions and start to realise the task as planned. Due to the good performance, I left this task a few minutes longer in each set (2x 10 minutes), which ended up shortening the time for the final task (shooting on goal)." *Training session 16, RD.*

On the other hand, when players' performance was below expectations, the coach chose not to continue with a task that did not meet the learning contents planned in the short-term. For instance, for a training session, the coach arranged a 4-team task on a single mini-field, where two teams played for 3 minutes while the other two teams observed. However, during the implementation of the training plan, the coach noticed that the organisation of the task was negatively impacting in the players' concentration levels and their performance in the task. Consequently, the coach adjusted the short-term training plans moving on to the next planned task. Additionally, in the next training session(s), the coach had to develop a more effective learning task to coach the same specific tactical principle, (re) adjusting the training plans in the long-term. The following excerpt described this situation:

> "The goal of the training was coaching the tactical principle of offensive coverage in small-sided games in a format of 3vs.2 or 4vs.3. However, in this training, I didn't split the group into two mini fields because by doing so, I would turn my back on one, so, I couldn't analyse the tactical behavior of the players. Thus, while 5 players performed the task, the other 7 waited behind the mini goals. However, the act of making the players wait turned the task boring for them. So, the performance in this task was not good. Finally, I decided to shorten the time of the task and move on to the next planned task." *Training session 15, RD.*

Adaptations in short-term planning due to extrinsic factors

One extrinsic factor that influenced the training plans was players missing from practice. To overcome this barrier without straying from the session's goals, the coach had planned previous variations into each learning task (e.g., changing team compositions or task rules). However, when multiple players were absent, despite the coach's adjustments to the plans to maintain the intended pedagogical goals, the tasks remained distant from the desired game principles. For example, if 2 players were absent in a task of Gk+6vs.5, the coach would need to adjust the teams for Gk+5vs.4, staying far from the formal game (Gk+6vs.6+Gk). Thus, beyond influencing the training plans, the players' absence had the potential to impact the players' learning process in the short- and long-term. The next excerpt supports this idea:

> "The objective of today's training was to work more on the defensive organisation (specific tactical principle of Concentration) in a format of Gk+5vs.5 +1 Floater (the team with the ball would have numerical superiority). This format would encourage the team without the ball to close the space to defend the goal. However, as 2 players were missing because they were sick (and gave notice minutes before the training), I changed the task design for Gk+4vs.4 + 1 Floater. Thereby, although the main training goal was not affected, the format of the game stay far away from the formal game (Gk+6vs.6+Gk)." *Training session 4, RD.*

Moreover, there were moments where players arrived late for training, forcing the coach to make necessary adjustments to the training plans. For example, the coach had designed a warm-up task to prepare the players for the main part of the training, a small-sided game (4vs.4+4 floaters) focused on developing the principle of Balance and typical technical actions such as tackles and interception skills. However, due to the arrival of three delayed players, the coach had to allocate extra time to explain the task and clarify its objectives, resulting in a loss of valuable training time. The coach made this decision based on the belief that players needed to comprehend the learning contents in the short-term, as it could be fundamental (hopefully) to the progression of learning contents in the long-term. Due to this decision, the coach was unable to fully execute all the tasks as initially planned. Alternatively, if the coach had strictly followed the prescribed time for each task without repeating the explanations and sets, the players who arrived late would have lost vital information. Thereby, the players could not have learned the learning content planned for that session. This dilemma faced by the coach was recorded in the week 6:

> "The objective of the training plan was to coach the tactical principle of Balance. During the training session, three players arrived late, so I had to repeat some sets of warm-up task (so that all players could understand the contents), thus losing time."
> *Training session 11, RD.*

Consequences of the interplay between short- and long-term planning goals in the macrocycle

Beyond the internal and external factors that emerged during the implementation of short- and long-term planning, the pedagogical goals of planning were being (re) planned over weeks based on players' needs as well as team performance in previous

games and training sessions. For instance, in a certain game, players performed technical errors such as passing and ball-control skills due to difficulties felt in terms of space management and positioning, thus not providing diagonal passing options for their teammates (i.e., Offensive Coverage). Without free passing options, the players either tried risky and ineffective passes into open spaces, or they passed the ball to teammates who were being marked by the opponents. Consequently, the player(s) received the ball in unfavorable conditions (with less time and space to decide and execute), causing a negative impact on ball-control skills. For this reason, in the next week, the coach adjusted the short-term training plans to reinforce the players' understanding on the tactical principles of play, deviating from the originally pedagogical goals planned in the long-term. Thus, the coach designed learning tasks to continue developing the principle of Offensive Coverage. For example, in the initial part of the training session, the coach developed tasks to enhance ball-control and short (diagonal) passing skills. In the fundamental part, the coach designed a small-sided game (3 x 3 + floater) with the attacking team in numerical advantage (overload) to increase free passing options. The following extract emphasises this situation:

> "This week's training session was completely re-planned due to the performance of the players and the team in the last game. In this game, the players made more tactical-technical mistakes than they usually do. For example, the players didn't offer offensive coverage options correctly, and they failed simple and short passes and ball receptions (e.g., central-back to right-back)." *Training number 5, RD.*

In the long-term planning, the coach progressed on the learning contents over the season based on a subjective assessment of the players performance and learning of the specific tactical principles. For example, if the coach perceived that the players were doing well in a set of tactical-technical actions, then he assumed that it was an indication

that the players were able to advance to another learning content or even a more advanced tactical-technical situation. As a strategy to progress the learning contents in the long-term planning, the coach used the weeks without official games to design short-term plans focused on long-term pedagogical goals. For instance, the coach adjusted the short-term plan after a game to correct team performance. In the subsequent week (without a formal game), the coach designed the tasks to teach a specific tactical principle as planned in the long-term. The coach felt that by adopting this approach, he could manage the coaching of specific tactical principles planning in the long-term with the demands that emerged from the short-term. The next extract emphasises this planning process:

> "As the team will not have an official game next weekend, the two training sessions of this week were planned to coach the specific tactical principle of Mobility, which I wish I had started teaching earlier in the season. Thus, the first task comprised a game format of 4vs.3 and 3vs.2, in which points were scored when a player received the pass behind the opposing goal line. The second task followed the same objective although using a collective scale and with goalkeepers (6vs.5+Gk). So, the players could only finish if they received a pass inside the opposing area (i.e., Mobility)." *Training session 7, RD.*

Discussion

This study aimed to conduct a qualitative investigation of the coach's planning, the corresponding implementation and adaptation of the planning, and the coach's perception about the coaching process. Thereby, we aimed to provide a description of how a soccer coach managed the interplay between short- and long-term planning. Our findings highlighted that the performance of the players in the official games, the intrinsic factors (e.g., the performance of the players in the tasks), and extrinsic factors (e.g., players' missing the training) that emerged in the short-term influenced the interplay among short- to long-term planning. Altogether, these factors created the need for the

redefinition of the learning contents in the training plans in the short-term (micro-cycle), and the pedagogical goals in the long-term (macrocycle).

The short-term plans required adaptions due to internal factors such as the players' performance in the execution of the tasks. Thereby, when was necessary to adapt the short-term training plans during its implementation, the coach manipulated key task constraints (e.g., game rules, task complexity and difficulty) to foster tactical-technical actions that would prompt skill development according to the players' responses to the tasks. Importantly, by providing learning opportunities for action exploration, players could be trained to actively self-regulate and exploit movement variability to facilitate skill adaptation (Araújo & Davids, 2011). Our training plans approach was supported by the recommendations of (Clemente et al., 2020; Davids et al., 2013; Praça et al., 2022; Ribeiro et al., 2017), who highlighted that manipulation of key task constraints during small-sided games can be an effective pedagogical approach for coaching the tactical-technical contents.

In our study case, the coach needed to manage several external factors (e.g., players not attending training) over the implementation of short-term planning. For example, when some players were absent, the coach had to adjust the teams' composition (e.g., Gk.+6vs5 to Gk.5vs4). This seemingly minor alteration could impact the players tactical organisation on the field, as the team format deviated significantly from the official game format (Gk.+6vs6+Gk). These external factors often required the coach to modify the training plans. Our finding is aligned with the description by Mees et al. (2020), who highlighted the constant need for adjusting the planning in sports contexts. Furthermore, the coach's ability to adapt training plans is related to their coaching expertise (Cushion et al., 2003; Mees et al., 2020). This expertise involves aligning initial

planning intentions, the modifications during implementation, and the real-life situations during practice (Collins et al., 2022).

In this study, the head coach designed simple variations in the tasks as a strategy to overcome these external factors. For example, the coach had previously planned different team compositions and task rules to make it easier to adapt training plans as needed. This strategy was used based on structured improvisation, described by (Cushion et al., 2003). In structured improvisation, coaches design alternative routes in the training plans, which may help them to operate the short-term plans without losing sight of the goals in the long-term (Afonso & Mesquita, 2018). However, as found in this study, and recently reported by (Bell et al., 2022), even with the design of alternative routes, the training plans perhaps will need to be changed because coaches cannot entirely predict how players will respond to the training stimulus given their intra- and inter-individual variability. Once again, these internal factors underlying training plans highlight the importance of coaches possessing exceptional adaptability skills within the coaching process (Elliott & McCullick, 2019).

Here, the internal and external factors in the short-term planning had consequences in the long-term planning. For instance, the coach needed to adjust the micro-cycle training plans based on the emergent needs of players in the short-term, deviating from the originally pedagogical goals planned in the macrocycle. Our findings are aligned with Jones and Wallace (2005), which highlighted that integrating short and long-term goals is strongly influenced by the immediacy of the next official games. This is one of the reasons why in team sports like soccer, coaches' planning is often dictated throughout each game week (e.g., short-term plans) (Bjørndal & Ronglan, 2021; Romero-Caballero et al., 2022). Within weekly training plans, coaches can teach the learning content planned in the long-term, correct performance mistakes, and prepare the team for

the next game. Moreover, coaches can design appropriate tasks to address each player's needs since they react differently to the same learning stimulus (Jones & Thomas, 2015).

In this case study, the head coach was generally concerned about the players' performance. However, it is important to understand that, at this category (U-10), players are in the process of learning and developing the fundamentals (tactical-technical elements) of the game, and it is normal that performance errors might occur. Nonetheless, within the context of coaching, the errors have been commonly understood as an element to be eradicated, when they should be viewed as an integral and structuring part of learning (Garganta et al., 2013). So, within the planning process, instead of suppressing errors, players should be encouraged to move and learn from their bodies, recognising their strengths and weaknesses. By doing so, players are provided with rich learning opportunities to play freely and explore a multitude of innovative and adaptive performance solutions (Ribeiro et al., 2021).

The interplay between short- and long-term factors influenced the rhythm of the progress of the learning content over the season. As a strategy, the head coach tried to progress the learning content based on a subjective assessment of the players' performance. For instance, when the coach noticed the players were performing well in the tactical principles of play, he assumed it was a sign that players could move on to advanced learning content. This approach was based on the indications of Lyle (2007), who highlighted that coaches can rely on key performance indicators to evaluate players' performance during training and competition. Moreover, coaches can also move learning content planning forward during the season by following a bidirectional approach that connects assessment and planning (Loureiro et al., 2022). This bi-directional method allows coaches to continually adjust short-term plans based on the emergent needs of contexts, while still staying aligned with the long-term goal.

Overall, the interplay in the training plans was due to multi-directional effects emerging from micro- and macro scales: that is, the fundamental of the game (tactical-technical elements) guided the definition of learning contents in the macrocycle, shaping the design of the training plans in micro-cycles. However, the constraints emerging in the micro-cycle influenced the implementation of short-term planning. Consequently, the coach adjusted the learning contents from short- to long-term planning. For instance, during week 3 of the intervention, the coach originally planned to focus on coaching the tactical principles of Mobility and Balance. However, based on players' needs, the head coach decided to shift the learning content for that week to reinforce the specific tactical principle of Offensive Coverage.

Conclusion and Practical implications

Our findings were that the interplay in the training plans was due to multi-directional effects emerging from micro and macro scales. Specifically, the soccer tactical principles of play guided long-term goals and shaped short-term training plans. Yet, short-term constraints influenced the implementation of short-term training plans, requiring the coach to adjust the long-term planning. Thereby, in our study case, planning was dictated by the long-term learning contents although designed week after week (i.e., in the short-term planning) based on the players' emergent needs.

However, we recognise there were limitations in this case study. First, the planning intervention with 8 weeks was short, whereas a longer planning intervention could generate more data on the interplay between short- and long-term planning. Secondly, the generalisability of this case study's findings needs to be considered since our data reflected the planning involved in the coaching process of a youth team within a specific context. Therefore, future investigations with more longitudinal interventions

should be done to better understand the interplay of short- and long-term planning implementation in soccer contexts.

As practical implications, coaches can design long-term planning that serves as a guiding framework for crafting short-term session plans. Consequently, these short-term plans must remain flexible based on players individual needs during tasks and games, influencing the overall progression of the long-term learning objectives. To facilitate this process, coaches can utilise key performance indicators (e.g., tactical principles of play) both in games and training sessions. These indicators may serve to evaluate performance and effectively advance pedagogical goals throughout the season.

Funding

This project was supported by the Foundation for Science and Technology (FCT, Portugal), under Grant EXPL/CED-EDG/0246/2021.

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CAPÍTULO IV
SÍNTESE FINAL

4.1 Discussão geral

Os objetivos da presente dissertação foram investigar os conceitos didáticos e pedagógicos do planeamento e a interação da implementação do planeamento a curto e longo prazo no contexto prático do futebol. Estudos similares estão disponíveis na literatura em contextos de futebol (Pass et al., 2022), e em outros contextos desportivos (Afonso e Mesquita, 2018; Kinnerk et al., 2021; Loureiro et al., 2022).

Na revisão narrativa, destacamos que o planeamento anual ou a periodização dos treinos desportivos podem não se ajustar perfeitamente porque a aprendizagem dos atletas pode diferir ao longo do tempo (Raviv et al., 2022), principalmente devido à elevada variação intra- e inter-individual indagada nas respostas dos atletas aos estímulos dos treinos (Bell et al., 2022). Esses destaques constataram-se no artigo observacional, no qual o treinador teve que ajustar os planos de treino de curto e longo prazo devido à não linearidade do desempenho dos jovens jogadores nos jogos e nas sessões de treino. Os nossos resultados práticos estão alinhados com os de Jones e Wallace (2005), e de Nash e Taylor (2021), os quais descrevem que os objetivos pedagógicos dos treinos e as decisões dos treinadores vão de acordo com as demandas emergentes a curto prazo (p.e., ritmo de aprendizagem dos jogadores), e são fortemente influenciados pelo imediatismo dos próximos jogos.

Nessa perspetiva, no artigo observacional, o treinador redesenhou os planos de treino de curto prazo com o objetivo de reforçar os conteúdos já ensinados, e corrigir os erros técnicos e táticos cometidos pelos jogadores no último jogo. Não obstante, importa realçar que o erro faz parte do processo de ensino-aprendizagem (Toering et al., 2011). Como tal, possíveis erros não devem ser repreendidos ou punidos sob pena de desencorajar os jovens futebolistas de arriscar e tentar novas soluções de desempenho para um determinado problema do jogo, tendo um claro impacto negativo no desenvolvimento global do jogador (Garganta, 2013). Nesse sentido, Garganta (2006) descreve que é necessário que os treinadores/professores identifiquem os erros e o porquê de eles terem ocorrido, para que possam elaborar atividades de aprendizagem para que os praticantes evoluam. Essa afirmação vai ao

encontro dos destaques da dissertação, na qual descrevemos sobre a importância do treinador de avaliar os níveis de desempenho dos atletas e, assim, conceberem atividades que atendam aos níveis de competências individuais.

No estudo observacional, para dar ênfase ao conteúdo planeado e estimular a aprendizagem dos jogadores, o treinador manipulava as restrições das tarefas (p.e., regras do jogo e número de jogadores). Essa abordagem pedagógica foi destacada também na revisão narrativa, na qual os professores/treinadores podem manipular as principais restrições das tarefas de aprendizagem para criarem contextos apropriados para os jogadores desenvolverem competências (Larkin et al., 2022; Ramos et al., 2022). No entanto, ao planear determinadas restrições da tarefa, os treinadores devem ter muito cuidado para não irem contra as regras internas do jogo e dos princípios táticos do futebol. Por exemplo, ao treinar o princípio tático da Penetração, em que o portador da bola deve conduzir a bola para tentar ultrapassar (driblar) o oponente, não seria sensato limitar o número de contactos na bola (p.e., três toques), pois isso condicionaria a eficácia da tarefa e a lógica do princípio tático (Penetração) desejado.

No artigo observacional, o treinador precisou ajustar as restrições das tarefas de acordo com as respostas dos jogadores perante as tarefas (fatores internos ao plano de treino). Como descrito na dissertação, essa necessidade de adaptar os exercícios está relacionada com a expertise do *coaching* no desporto (Collins et al., 2022; Mess et al., 2020). Portanto, o treinador desempenha um papel crucial na implementação do planeamento, onde ele deve analisar os exercícios, avaliar se os mesmos estão a provocar o efeito desejado e, se necessário, ajustar o plano de treino sem desviar o foco dos objetivos delineados para a sessão de treino. Durante a época desportiva, devido à minha pouca experiência como treinador principal, tive dificuldades em adaptar os exercícios quando estes não eram executados conforme o planeado. Nesse contexto, enfrentava um dilema interno quanto à restrição da tarefa a alterar para atingir o objetivo planeado, ou se eu deveria modificar todo o exercício e passar para o próximo planeado.

Por outro lado, no artigo observacional, o treinador precisou realizar alterações nos planos de treinos de curto prazo também devido a fatores

externos, como a ausência ou atraso dos jogadores ao treino. Essas dificuldades encontradas pelo treinador no processo de treino estão alinhadas com a complexidade do *coaching* no desporto, no qual é identificada pelas constantes imprevisibilidades que os treinadores devem procurar gerir durante a prática (Jones & Wallace, 2005; Lyle, 2007). Como estratégia para superar essas imprevisibilidades, uma das implicações práticas desta dissertação recai na elaboração de rotas alternativas, com base na '*regulated improvisation'* descrita por (Cushion et al., 2003). Por exemplo, os treinadores podem planear previamente adaptações na composição das equipas nos exercícios, caso 1 ou 2 jogadores faltem ao treino. Utilizando essa abordagem, os treinadores podem gerir melhor as imprevisibilidades que acontecem no dia-a-dia, além de conseguir operacionalizar os planos de curto prazo sem perder de vista os objetivos planeados a longo prazo (Afonso & Mesquita, 2018).

Relacionado à elaboração do planeamento, os treinadores podem atender a lições valiosas provenientes de outros contextos educacionais, como o de Educação Física. Conforme destacado na revisão narrativa, devido à heterogeneidade dos contextos de Educação Física, os professores frequentemente precisam planear aulas que atendem alunos com uma ampla diversidade de capacidades, habilidades, interesses e níveis de competências (Blumenfeld et al., 2006; Storm & Svendsen, 2022). Dessa forma, ao transferir os conceitos pedagógicos da Educação Física para o contexto de treino, os treinadores podem elaborar planos de treino mais flexíveis para atender aos jogadores com variados níveis de motivações e de habilidades (Dixon et al., 2014). Por exemplo, os treinadores podem planear variações nas tarefas (p.e., relações numéricas, dimensões do espaço de jogo, tempo) para jogadores com diferentes níveis de desempenho. Assim, cada grupo pode participar de exercícios que se alinhem com seus respetivos níveis de habilidade, permitindo instruções e correções mais personalizadas por parte dos treinadores.

De forma geral, esta dissertação destaca que, o contexto de treino emerge da necessidade de um planeamento mais cuidadoso dos objetivos e das tarefas a curto e longo prazo, para conceber ambientes de aprendizagem mais apropriados (Larkin et al., 2022). Além disso, os treinadores devem ajustar as estruturas do planeamento de uma forma mais aberta e flexível, de acordo com a natureza não linear do processo de aprendizagem (Raviv et al., 2022).

Portanto, no planeamento de longo prazo, devem ser elaborados os objetivos pedagógicos ou metas de performance que devem ser alcançadas ao longo daquele período planeado (p.e., uma temporada desportiva). Para uma progressão mais eficaz e apropriada, os treinadores podem apoiar a sua intervenção pedagógica com base na avaliação contínua da aprendizagem e do desempenho dos jogadores. Guiados pelas avaliações contínuas e pelos objetivos a longo prazo, elaboram-se os planos de treino a curto prazo que contribuem para a construção do planeamento de longo prazo, através de um *feedback* bidirecional contínuo (Afonso et al., 2023).

4.2 Limitações do estudo

Não obstante a relevância dos resultados apresentados, esta dissertação apresenta algumas limitações. Uma delas prende-se com a revisão narrativa, da qual se constatou uma vasta literatura relacionada ao planeamento nos contextos de *coaching* e da Educação Física. Portanto, é possível que temas potencialmente relevantes tenham sido deixados de fora. Outra limitação desta dissertação, no artigo observacional, deveu-se ao período de intervenção mais curto, apenas 8 semanas, o que limitou a recolha de dados em maior escala e a consideração de possíveis imprevisibilidades que poderiam ocorrer em um planeamento de longo prazo.

4.3 Desafios futuros

Espera-se que os resultados dessa dissertação possam gerar futuros contributos práticos e teóricos para professores, treinadores e investigadores da área do desporto, em particular no futebol. Portanto, com base nas limitações do estudo experimental, sugere-se que futuras investigações contemplem intervenções de natureza longitudinal com o propósito de melhor compreender as interações da implementação do planeamento a curto e longo prazo. Além disso, espera-se que mais investigações explorando os contextos de Educação Física escolar e do treino desportivo sejam realizados e que ambos os contextos

possam evoluir através do compartilhamento de conhecimentos pedagógicos, didáticos, entre outros.

4.4 Conclusões

A elaboração do planeamento no processo de treino desportivo deve contemplar uma abordagem mais flexível e bidirecional, na qual o planeamento de longo prazo orienta o planeamento de curto prazo, mas este também influencia na elaboração do planeamento de longo prazo. Assim, no planeamento de longo prazo são elaborados os objetivos pedagógicos que devem ser alcançados ao longo de um determinado período planeado. Com base nos objetivos a longo prazo, elaboram-se os planos de treino a curto prazo que ao longo da temporada desportiva contribuem para a construção do planeamento de longo prazo.

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