

Profiling the athletic career of Portuguese Football Players in last 50 years

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Declaração de Integridade

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Dedicatória

“O fim de carreira desportiva é apenas uma parte da vida dos atletas que normalmente continuam numa carreira ocupacional, como uma oportunidade de renascimento social.”

Stambulova & Wylleman

Aos jogadores de futebol

Agradecimentos

Este trabalho é fruto da minha forma de estar, uma pessoa permanentemente há procura de novos desafios. Durante 20 anos de jogador profissional de futebol sempre procurei viver fora da bolha do futebol, estar sempre ao corrente do que se passava fora dele e com isso deixar uma marca. Depois da licenciatura em 2006 e do mestrado em 2014, o doutoramento foi um passo de gigante para concretizar algumas ideias que vinha tendo sobre esta temática, coisas que vivia no meu dia a dia e transformá-las em investigação. Em 2017, quando lancei o projeto “A Minha Causa” tinha como objetivo despertar uma geração de pessoas sobre o desenvolvimento e transição para o pós carreira. Foi um início de um caminho cheio de intenções, que me levou para inúmeros desafios onde o espírito de sacrifício, persistência e resiliência foram fundamentais para cumprir os meus propósitos. Procurei ao mesmo tempo que jogava ao mais alto nível mostrar mais uma vez ao mundo que era possível conciliar uma carreira no futebol e fazer investigação. Foi duro, incrivelmente duro, que só com ajuda de algumas pessoas posso hoje apresentá-lo.

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Prefácio

Não se ouvia um rumor na tarde parada desta aldeia algarvia onde veraneio, na companhia de minha mulher e de minha filha. De súbito, quero eu dizer: sem que o esperasse, recebo um telefonema do Tarantini, futebolista do Rio Ave e doutorando da UBI: “Professor, não esqueço o que nos vem ensinando, já há muitos anos: não há chutos, há pessoas que chutam; não há fintas, há pessoas que fintam; não há dribles, há pessoas que driblam, se eu não conhecer as pessoas que chutam e fintam e driblam jamais compreenderei nem os chutos, nem as fintas, nem os dribles”. E, após breve pausa, acrescentou: “Professor, é porque diz diferente dos outros que lhe peço um prefácio à minha tese de doutoramento”. O telefonema do Tarantini lançou uma luz recorrente sobre o meu passado e recordei emocionado uma frase do Sr. José Maria Pedroto, referindo-se à minha modesta pessoa. Quando, num dos nossos periódicos encontros, no Porto, na pastelaria Petúlia, lhe perguntei: “Ó senhor Pedroto, se eu, à beira do meu Amigo, nada sei de futebol, por que manifesta tanto interesse em falar comigo?”. E ele, com um fraterno sorriso nos lábios: “Porque diz diferente!”. Ou seja, o senhor Pedroto e o Tarantini classificaram a minha prosa, com a mesma expressão: eu digo diferente! Ele (o senhor Pedroto), através do professor João Mota, seu fiel adjunto, consultava, de quando em vez, o Dr. David Monge da Silva, sobre “novidades, acerca do treino”. Mas o Monge da Silva, nesses anos passados, era o especialista que mais sabia de treino desportivo, em Portugal. Justificava-se, portanto, muito judiciosamente, o interesse do senhor Pedroto. No meu caso... por vezes, a generosidade não tem limites! Hoje, que arrasto o meu corpo, sem forças para tanto, ainda tenho saudades daquele luxuoso “ludus” da troca de ideias e de opiniões com um dos dois homens que fizeram aquele inolvidável milagre de refundar o Futebol Clube do Porto: José Pedroto e Pinto da Costa.

Voltemos, no entanto, ao Tarantini. Está prestes a deixar de ser profissional de futebol (assim mo confessou), mas não quer aquietar-se na rotina do quotidiano: pois que é licenciado em educação física e desporto, vai agora tentar doutorar-se, na mesma área do conhecimento, na Universidade da Beira Interior. Nasceu em Baião, tem 37 anos de idade e jogou no Amarante, no Covilhã, no Gondomar, no Portimonense e no Rio Ave. O seu nome de batismo é este: Ricardo José Vaz Alves Monteiro. Mas é por Tarantini que o conhecem os “agentes de futebol” e até o público em geral. O tema do seu doutoramento diz-nos o perfil humano e moral do Dr. Ricardo Monteiro. Ele sabe, após uma longa e trabalhosa carreira, que o futebol é mais do que futebol e que “não há jogos, há pessoas que jogam”. E que o ex-futebolista é um homem que deixou de jogar futebol federado. O brasileiro Gilberto Freire diferenciava dois estilos de jogar futebol, usando duas palavras que Nietzsche celebrou e encontrou na mitologia grega: Apolo e Dionísio. E adiantava o Gilberto Freire

que o futebol europeu (cartesiano, racional e formal), próximo, portanto do deus Apolo, se distinguia do futebol brasileiro (sentimental, individualista, apaixonado), com as características de Dionísio. Tarantini é bem um apolíneo jogador de futebol e, como tal, mostrando inteligência, muita inteligência no que faz. No livro **O Negro no Futebol Brasileiro**, da autoria de Mário Filho e editado em 1947, o prefaciador, precisamente o Gilberto Freire, escrevia: “Com esses resíduos é que o futebol brasileiro afastou-se do bem ordenado original britânico, para tornar-se a dança cheia de surpresas irracionais e de variações dionisíacas que é. A dança dançada baianamente por um Leónidas e por um Domingos, com uma impassibilidade que talvez acuse sugestões ou influências ameríndias sobre sua personalidade ou sua formação. Mas, de qualquer modo, dança” (Tiago Maranhão, in **Análise Social**, Universidade de Lisboa, 2º. Trimestre de 2006, p. 445).

Seria interessante referir ainda que o Mário Filho salientou, nesta obra, que o futebol brasileiro, quando era praticado unicamente por brancos, parecia “algo de fora, alienígena à sociedade brasileira, quando passou a ser exercido por negros e mulatos, tornou-se nacional, brasileiro” (pp. 445/6). Tarantini, jogando à bola como joga, ou seja, sendo um jogador que dá mais atenção às “razões da razão” do que às “razões do coração”, é um homem que prepara o seu futuro, com rigor, com sabedoria, a que não falta vontade e pujança vibrante. Afinal, um homem de valores, arrebatado pela visão de um mundo melhor. Estuda, vê, observa, classifica e, por fim, valoriza. Não o faço da linhagem dos grandes líderes (descendentes dos velhos **condottieri** italianos) mas é um profissional exemplar, um futebolista que será sempre lembrado, quando se persegue a “excelência”. Ai do grande homem a quem não se puder imputar uma sombra, ou um defeito, ou um pecado. Não é um homem, é um “robot”. Lembrem-se da resposta de Jesus a uma turba enfurecida, na qual se incluíam escribas e fariseus, que exigia a lapidação de uma mulher adúltera? “Aquele de entre vós que nunca tenha pecado seja o primeiro a atirar-lhe uma pedra”. E inclinou-se e começou a escrever no chão. Dos acusadores, houve quem lesse: adúltero; outros: assassino; outros ainda: perjuro; e um escriba: ladrão. E todos se afastaram e desapareceram. Nesse então, Jesus levantou-se e perguntou à mulher: “Ninguém te condenou?”. E ela, ainda lacrimosa: “Não, Senhor, ninguém me condenou”. E Jesus, com uma grandeza sem cálculo: “Eu também não te condeno. Vai e não voltes a pecar!”. Defeitos, todos os temos... até as pessoas medularmente boas, como o Tarantini. O líder não é o que não tem defeitos, tem poucos, que não apagam o fulgor das excepcionais qualidades. De facto, qualidades de tal modo excepcionais que os “liderados” nem dão pelos defeitos do líder!

A propósito de Jesus, não deverá omitir-se que o cristianismo é a principal matriz da nossa civilização ocidental. Como S. Paulo dizia, perante o areópago ateniense, a respeito de Deus, do cristianismo se pode dizer também que “nele vivemos, nos movemos e existimos”. Jogador de futebol de muitos méritos, estudioso insaciável, conhecendo, como poucos, o

futebol e pessoa de recto juízo – o que faltará ao Tarantini para iniciar uma carreira de treinador de futebol? Falta ainda muito, eu sei! Principalmente ter a sorte da companhia de dirigentes honestos e competentes (que também os há). No entanto, é um pecado sem remissão fechar os olhos à vaga de interesses inconfessáveis, de ambições desmedidas, de paixões imparáveis, que crescem para o futebol. E depois fortemente o condicionam. O jovem treinador paga caro o desconhecimento destes assuntos. Será, mais tarde ou mais cedo, o inevitável bode expiatório de um campeonato menos feliz e sem ter, em seu favor, qualquer demonstração de estima e desagravo. Quando eu era rapaz, e mesmo já “recém-adulto”, quem não fosse ex-futebolista não poderia aspirar à profissão de treinador de futebol. Foi o Doutor José Mourinho um dos primeiros (se não o primeiro) que, no mundo todo, teve uma intervenção transformadora e conseguiu que o aplaudissem como o melhor de todos os treinadores da FIFA, sem ter sequer bordejado o estrelado, como jogador de futebol. Mas o José Mourinho é, intelectualmente, um superdotado. A meu juízo, dos muitos treinadores de futebol que conheci, em Portugal, nenhum tinha a preparação científica do José Mourinho. O Doutor Luís Lourenço, o seu mais respeitado biógrafo, comprova o asserto com uma obra que já tem lugar em qualquer biblioteca universitária. Ora, o Doutor Ricardo José Vaz Alves Monteiro tem a eloquência popular, fácil e chã do futebol, mas quer também fundamentar, no conhecimento científico, o muito que praticou no “desporto-rei”. Com o seu espírito irrequieto e brilhante, por que espera o futebol português no apoio que deve à inteligência e à vontade do Doutor Ricardo Monteiro? A sua tese de doutoramento diz-nos que há Futuro, para um futebol novo em Portugal! Até porque o Tarantini também já sabe que “não há jogos, há pessoas que jogam”.

Por Manuel Sérgio - professor aposentado

Como dominar o processo do declínio? Como encarar o fim de uma carreira que, mesmo repleta de sucessos será inevitavelmente curta? Estas perguntas revelam uma inquietação transversal a qualquer atleta - paira, como eco, sobre todo este trabalho. São elas que designam, que tornam necessários e imprescindíveis, os rigorosos e vastos estudos realizados por Tarantini. Com esses estudos, carregados de método e ambição, conquistase a possibilidade de tornar previsíveis as circunstâncias do declínio da carreira de um jogador de futebol, relacionando-as com um conjunto de variáveis aplicáveis em função do caso particular de cada atleta. Nos estudos levados a cabo por Tarantini encontramos sobretudo um desejo de conceber algum domínio sobre o processo do fim da carreira de um futebolista; de o tornar transparente evidenciando as capacidades reais em cada momento; capaz de orientar e permitir boas decisões.

O livro de Tarantini trata de uma tomada de consciência da capacidade física num determinado momento. Revela a possibilidade de gerir e de ver no término de uma carreira uma possibilidade, talvez como uma outra fase de desenvolvimento, talvez última, mas em nada menos valiosa. Como um trabalho que aceita a realidade inescapável, os estudos de Tarantini esperam a possibilidade da adaptação das expectativas e dos esforços a essa realidade.

Como ex-atleta, leio este livro com o apaziguamento de o reconhecer como um projeto cujo fim é o empoderamento do atleta com a arma da consciência da sua circunstância- o poder que nasce do autoconhecimento, da autogestão e da autoeficácia.

O insucesso pode afastar-se com a certeza matemática dos estudos, com tantos atletas envolvidos, com tantos dados considerados.... Caminhamos definitivamente em direção ao sucesso de todos; à qualidade coletiva; vamos pondo o fracasso para trás das costas, esperando que valioso trabalho de Tarantini surja como mais um passo nesse caminho.

Por Luís Castro - treinador de futebol

Estávamos no começo da época e estava a falar com os jogadores do Rio Ave sobre uma qualquer situação de jogo! De repente o capitão Tarantini pede para intervir e questiona-me sobre uma determinada movimentação... Ao longo da minha experiência em tantos anos de futebol não era normal ser questionado sobre questões táticas e técnicas por jogadores meus, embora nada me incomodasse, bem pelo contrário. Sabia bem o que queria para a minha equipa e tinha a resposta pronta, apesar de surpreendido! Era assim Tarantini enquanto jogador, queria saber o porque e como se fazer! Admito que possa ter sido incômodo para alguns colegas meus no passado pela sua capacidade de questionar. Eu admiro imenso pessoas assim, com análise crítica e que não são simples corpos em movimento, mas sim seres humanos que pensam e jogam o jogo. Este exemplo clarifica muito bem o Capitão como lhe gosto de o chamar. Pessoa interessada em saber cada vez mais e que não se conforma com “frases feitas”, quer sempre chegar ao nível de excelência.

Este trabalho é claramente representativo da sua personalidade. Pessoa interessada nos outros, no seu futuro, e, também ilustra a forte capacidade crítica sobre um tema que é muito atual e que é importantíssimo no contexto da nossa sociedade... o próximo passo para um desportista em fim de carreira.

Desde os meus 16 anos que sou profissional de futebol, primeiro como jogador e agora aos 55 como treinador. Ao longo desta caminhada tive imensos colegas e jogadores e sei e vivi de perto, o drama de muitos... Acaba a carreira, habituados a ganhar bem e a ter um nível de vida muito elevado, e quando o dinheiro que parece muito começa só a sair e não entra, é o descalabro. Muitas vezes alguns com a precipitação do final da carreira, metem-se em negócios sem estarem preparados e perdem quase todas as suas poupanças, ou noutros casos, enganados por “pseudo” amigos ou até familiares. Há outro tema também muito sensível que constatei ao longo do tempo, o drama de acabar a carreira e o cônjuge (homem ou mulher) solicitar o divórcio! Assim vai a estabilidade familiar e 50% dos rendimentos num minuto! Há muita impreparação para o próximo passo ao fecho da carreira de muitos desportistas profissionais, assumindo-se muitos “dramas” que são do conhecimento público de seres humanos que ganharam muito dinheiro e estão na miséria! Este trabalho do Capitão é extremamente pertinente e vai “obrigar” ao debate e reflexão crítica. Se não fosse por mais, só esta última ideia, já tornaria pertinente este estudo. Urge sensibilizar os jovens potenciais profissionais de Desporto de amanhã, prepará-los para uma alternativa (ou até via principal de sustento que não seja o Desporto). Preparar melhor e “educar” os profissionais de Desporto seniores para o próximo passo após final de carreira, etc, etc... Parabéns Capitão, amanhã grande treinador ...

Por Carlos Carvalhal - treinador de futebol

Foi com orgulho e entusiasmo, que prontamente aceitei deixar o meu contributo neste trabalho académico tão relevante do meu colega de profissão e amigo Tarantini.

Estudos, como o por ele realizado, trazem ao futebol profissional a perspetiva e consciência de que o jogador é muito mais do que a figura de jogo e os seus resultados enquanto profissional. Urge consciencializar toda uma estrutura envolvente e os próprios, da importância e mais-valia em considerar precocemente os variados fatores que influenciam a carreira e a estruturação de vida de um profissional de futebol. O jogador é acima de tudo e primeiramente o sujeito que se encontra por detrás do equipamento. Consciencializar os diversos agentes desportivos e o próprio, de que as influências no seu trajeto profissional, nos seus resultados e equilíbrio são multicontextuais e multifatoriais é fundamental a fim de rentabilizar ao máximo o seu percurso profissional e transição.

Fazê-lo com base em evidências empíricas é ainda mais relevante e considerável, para que desta forma se possam estruturar e projetar planos de acompanhamento que potenciem o jogador ao seu máximo e permitam simultaneamente uma estruturação individual e personalizada de um plano de vida em todas as suas fases.

Como ex profissional de futebol de alto rendimento, considero que o meu percurso profissional e preparação para a transição pós futebol, não obstante as dificuldades, foram feitos com sucesso, uma vez que dispunha de competências e de uma rede de suporte individual que me permitiu estar preparado e alerta para fatores que muitas vezes são desconsiderados. Infelizmente isso nem sempre se verifica nos jogadores profissionais, tanto jogador como rede envolvente não possuem conhecimentos que lhes permitam estruturar o seu percurso e futuro. Desta forma, dados como os obtidos neste estudo permitirão que desde cedo haja uma maior sensibilidade e foco numa estruturação consciente e assente em variáveis que devem ser todas em conta, favorecendo todo o caminho do profissional desde a sua formação, ao longo do seu percurso e término.

Por Hélder Postiga - ex Jogador profissional de futebol e Diretor da FPF

Resumo

Este trabalho teve como objetivo identificar Indicadores Chave de Carreira (ICC) que caracterizam as várias fases do desenvolvimento atlético de um jogador de futebol, bem como o seu valor preditor do nível competitivo e idade da retirada. Para além disso, procurou uma melhor compreensão da relação entre alguns traços psicológicos e o planeamento de carreira. Para tal, foram realizados três estudos onde se procurou: a) descrever e identificar o peso dos ICC no nível competitivo da retirada de jogadores de futebol; b) relacionar o desenvolvimento atlético dos jogadores e a idade da retirada dos jogadores Portugueses de futebol; c) identificar o papel da autoeficácia, objetivos de carreira e identidade atlética no planeamento de carreira dos jogadores Portugueses de futebol.

Relativamente ao estudo 1 os resultados demonstraram que os ICC, idade do primeiro registo como jogador sénior, número de jogos jogados ao longo das épocas e idade do último melhor resultado alcançado, contribuem para explicar e prever o nível competitivo da retirada dos jogadores Portugueses de futebol. Os resultados do modelo proposto no estudo 2 destacou que os ICC identificados nos vários estágios do nível de desenvolvimento atlético de um jogador de futebol contribuem para explicar 40% da idade da retirada dos jogadores em análise.

Por fim no estudo 3 os resultados revelaram que, no geral, o planeamento de carreira é positivamente influenciado pelo nível de autoeficácia dos jogadores por meio da definição de objetivos de carreira e negativamente influenciado pelo nível de identidade atlética.

Em conclusão, os resultados sugerem que é possível monitorizar alguns indicadores chave de carreira que permitem descrever prospetivamente o desenvolvimento da carreira de um jogador de futebol, com implicações para o processo de planeamento e gestão da mesma. O desenvolvimento da autoeficácia, bem como de objetivos de carreira associados a uma gestão equilibrada da identidade atlética, contribuem de forma determinante para um melhor planeamento de carreira.

Palavras-chave

Futebol; Gestão de carreira; Planeamento de carreira; Retirada; Desenvolvimento atlético; Indicadores Chave de carreira

Abstract

This work aimed to identify Key Career Indicators (KCI) that characterize the various stages of athletic development of a football player, as well as their predictive value of competitive level and retiring age. Furthermore, it sought a better understanding of the relationship between some psychological traits and career planning. To this end, three studies were carried out, which sought to: a) describe and identify the weight of the KCI on the competitive level of retirement of football players; b) relate the athletic development of the players and the retiring age of Portuguese football players; c) identify the role of self-efficacy, career goals and athletic identity on the career planning of Portuguese football players.

In study 1, results showed that the KCI, age of first registration as a senior player, number of games played over the seasons and age of the last best result achieved, contribute to explain, and predict the competitive level of retirement of Portuguese football players. The results of the model proposed in study 2 highlighted that the KCI identified at the various stages of the athletic development level of a football player contribute to explain 40% of the retiring age the players under analysis.

Finally, in study 3, the results revealed that, in general, career planning is positively influenced by the level of self-efficacy of the players through the definition of career goals and negatively influenced by the level of athletic identity.

In conclusion, the results suggest that it is possible to monitor some key career indicators that allow a prospective description of the career development of a football player, with implications for the planning and management process. The development of self-efficacy, as well as career goals associated with a balanced management of athletic identity, decisively contribute to better career planning.

Keywords

Football; Career management; Career planning; Retirement; Athletic development; Key career indicators

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List of Acronyms

| | |
|-----------|---|
| AFRSP | Age at First Registration as Senior Player |
| AI | Athletic Identity |
| AVE | Average Variance Extracted |
| AUC | Area Under the Curve |
| CFA | Confirmatory Factor Analysis |
| CFI | Comparative Fit Index |
| CI | Confidence Intervals |
| CIDESD | Research Center in Sports Sciences, Health Sciences and Human Development |
| CG | Career Goals |
| CP | Career Planning |
| DSL | Discontinuation Stage Length |
| FCT | Portuguese National Science Foundation |
| FIML | Full Information Maximum Likelihood |
| FSCL | First Senior Competitive Level |
| HAC-model | Holistic Athletic Career Model |
| ICC | Indicador Chave de Carreira |
| JST | Junior-to-Senior-Transition |
| KCI | Key Career Indicators |
| LBRAA | Age of the Last Best Result Achieved |
| M | Means |
| ML | Maximum Likelihood |
| NGRS | Number of Games in Retirement Season |
| NHL | National Hockey League |
| NSSP | Number of Seasons as Senior Player |
| NSSPT3 | Number of Seasons as Senior Player in Top 3 Clubs |
| NSYP | Number of Seasons as Youth Player |
| NSYT3 | Number of Seasons as Youth Player in Top 3 Clubs |
| NTGSP | Total Number of Games as Senior Player |
| OC | Odds Ratio |
| RA | Retiring Age |
| RCL | Retirement Competitive Level |
| ROC | Receiver Operating Characteristic |
| RMSEA | Root Square Error of Approximation |
| SD | Standard Deviations |
| SE | Self-Efficacy |
| SRMSR | Standardized Root Mean Square Residual |
| TLI | Tucker-Lewis Index |
| TNGSP | Total Number of Games as Senior Player |
| UBI | Universidade da Beira Interior |
| VIF | Variance Inflation Factor |

1. Introduction

1.1 Athletic career development and transitions

In the last years the discussion about the definition of the athletic career and its importance in the field of sports was recognized. The athletic career is generally defined as a process of development of athletic performance voluntarily chosen to achieve the best athletic performance and result in a specific sport (Alfermann & Stambulova, 2007; Stambulova & Wylleman, 2014). Since 1960, a lot of changes occur, on conceptual, theoretical, and methodological aspects for a better understanding of athlete's career and transitions. Initially the studies focused on athletic retirement as a singular, all-ending event, which was supported and influenced by thanatology (the study of the process of dying and death), and social gerontology (the study of the aging process) highlighted that transition as a negative and even traumatic life event (see Park et al., 2013). Although these models and theories were considered to explain the athletic retirement issue, this approach failed essentially, due their non-sport specific character (differences between the sports and occupational context), the presumption that career termination is a negative event, and the non-existence of life after athletic retirement (Park et al., 2013).

Considering that the end of sports career is only part of the athletes' life, and after that, new occupational careers and opportunities for social rebirth occur, researchers advocated that the athletic career termination should be seen as a transitional process rather than as singular event. Thus, over the years, the topic evolved from a focus on athletic retirement as a "social death" moment to be considered as a process of life development. In last 20 years the major shift was the conceptualization of a holistic view of athletes' development, viewing the athletic career as part of life career with many development challenges and transitions in other spheres of the athletes' lives, helping to understand the transition as a process, and a career change event (Stambulova et al., 2020). In line with that, career transitions research focus on description and explanation of a transitions process and factors involved in terms of normative, non-normative and quasi-normative athletic and non-athletic transitions (Samuel & Tenenbaum, 2011; Stambulova & Wylleman, 2014; Taylor & Ogilvie, 1994). Each transition is associated to a set of specific demands requiring adjustments by athletes to promote changes in individual's career trajectory.

1.2. Stages of athletic development and transitions according to the Holistic Athletic Career Model

The Holistic Athletic Career Model (HAC-model; Wylleman, 2019) is one of the most use approach to analyze career development and retirement. The authors proposed that the understanding of individuals' career needs to consider the career development stages and pathways of players' development. Over their entire career, the changes that athletes experience

comprise several individual challenges, such as complex emotions, negotiation of changes in their identity, as well as the disruption of their social network (Brown et al., 2018). Based on that, athletic career is now defined as a process with different levels of development that integrate other life domains (Torregrossa et al., 2015). It results from a sequence of phases, multiple events, and choices in a multilayer process of athletic, psychological, psychosocial, academic, vocational, financial, and legal issues (see Figure 1). Accordingly, the HAC-model synthesized a non-linear process composed of four stages of athletic development with the correspondent normative athletic transitions: *Initiation* in competition sports, 6-7 years of age; *Development*, increase in the level of training and competition, 12-13 years of age; *Mastery*, transition to the senior level and participation at high competitive level, 18-19 years of age; and *Discontinuation*, preparation of transition out of the sports career, 28-30 years of age (Wylleman et al., 2004; Wylleman et al., 2013).

Looking at Initiation and Development stages, recent research revealed that the career paths in German youth national teams is characterized by eight different career paths (Schroepf & Lames, 2018). Each path is characterized by specific relations across different variables, namely: the number of years as youth players, the appearances in the national teams, or being or not professional. A recent retrospective study with Portuguese international football players revealed that over the last ten years the career path started earlier with an increase in the length of Initiation and Development stages (increase in the number of years as youth players) and a decrease in the length of the Mastery stage (decrease in the number of years as senior professional players) (Carapinha, Torregrossa, et al., 2019). Thus, due to the opposite tendency of a decrease in the number of years in Development and increase in the number of years in Mastery stages, further research is required to understand the link between both stages, the implications for the process of talent development, junior to senior transition, and also the process that leads to career development and retirement (Stambulova et al., 2020).

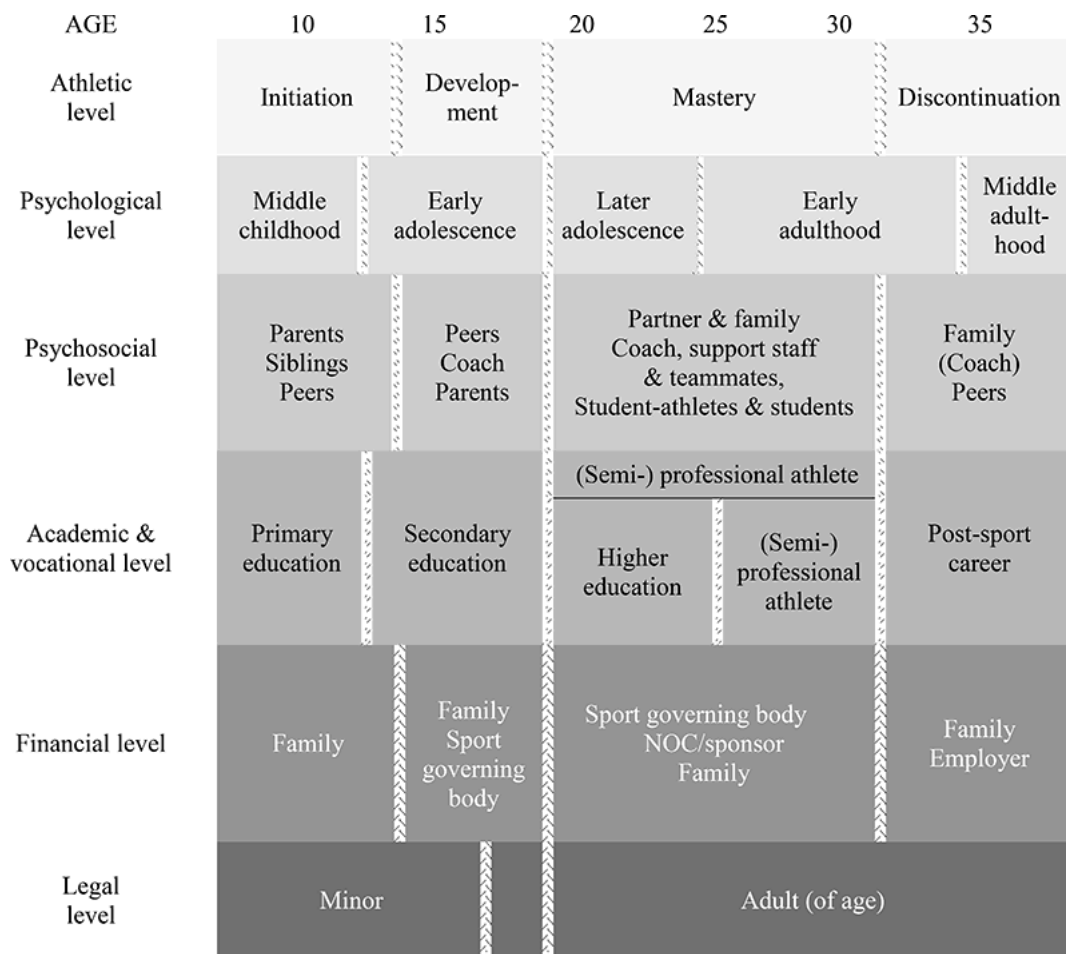


Figure 1. HAC-model with the definition of the different levels of life domains and the identification normative transitions over the sports career (Retrieved from Wylleman, 2019)

In different sports (Battocchio et al., 2016; Ekengren et al., 2019), it was highlighted that the mastery stage is characterized by four stages related to the level of performance of practice (i.e., access to semi-professional or professional sport, developing as a professional player, reaching the elite, and maintaining the professional status). Both studies reinforce that the mastery stage lies between the normative transition from junior to senior and retirement transition integrating others non-normative transitions that players face during their senior career (Ekengren et al., 2019). The discontinuation stage is a normative transition and the last stage of sports career. From that point the athletes stop participating in sports competitions and start a new professional career in or outside sports (Stambulova & Wylleman, 2014).

Although the HAC-model emphasized the holistic view of athletes' career development in a multilayer process, to the best of our knowledge no study has been developed to focus on the athletic layer of development to understanding the multidimensional implications on players' development and retirement. For that, there is a need to better understand what characterizes each athletic stage and how it influences the transitions, such as the retirement.

1.3 Retirement as a process of career development

In the discontinuation stage, the athletic retirement has been one of the most studied topics (Knights et al., 2016; Stambulova et al., 2009). The purpose of previous research was to identify and evaluate the best predictors that explain the athletic retirement and the quality of athletic retirement in different sports (Park et al., 2013). However, in football and in team sports in general, the analysis of athletic retirement is far from being a hot topic of research (Carapinha, Torregrossa, et al., 2019). Despite the well-known and reported problems that football players face at the end of their athletic career (Sanders & Stevinson, 2017), a recent systematic review on athletic retirement in football only reported eight studies in last 18-years (Carapinha, Mendes, de Carvalho, et al., 2019). Also, despite some similarities between studies, it was highlighted that the motives of retirement are dependent on the country in analysis. Interestingly, the common factor of retirement between all the countries, and one of the most reported, was age. Similar results were obtained in other sports, with the age of retirement being one of the factors that most influence the athletic retirement (Dimoula et al., 2013; Park et al., 2013; Torregrossa et al., 2015). The evolution of the sports career topic to a holistic lifespan perspective, brought important knowledge to support the athletes to make the transition, namely the reasons for career termination, retirement demands, resources and barriers, coping strategies, and quality of adaptation. This information is essential and responsible for an athlete's decision to terminate (Park et al., 2013). That is, the more and better information the athlete has about his career and the retirement process, the easier it will be to define the career planning and consequently make the decision to terminate voluntarily.

1.3.1. The importance of career planning

The predictability of normative transitions, such as career retirement, creates an opportunity to prepare athletes to cope with them in advance (Stambulova et al., 2009). In fact, players' career is a process that should be prospectively managed to balance individual resources and barriers to prepare a smooth retirement and the life after sport (Alfermann & Stambulova, 2007; Demulier et al., 2013). In line with the social cognitive career theory (Lent & Brown, 2013), a positive relationship between self-efficacy, career goals, and career planning seems to be key to such process (Demulier et al., 2013).

For instance, self-efficacy of athletes has been one of most important internal factors reported to explain successful career transitions (Wendling & Sagas, 2020). According to Lent and Brown (2013) self-efficacy could be defined as an individual belief or ability to successfully perform, and self-efficacy in career transitions refers to the ability to manage the tasks related with career planning and management. In its turn, influenced by self-efficacy levels, career goals are defined as the intentions of athletes to be engaged with a certain task to achieve a specific outcome. Thus, career goals influenced by self-efficacy levels, contribute for a better definition of career objectives and the consequent steps or planning to achieve them. More precisely, career goals refer to the definition of the intended set of professional and life achievements and the subsequent plans to achieve them (Demulier et al., 2013). When the objectives are clearly identified, career plans are

made to pursue those previously identified objectives, triggering career achievements, and facilitating transitions.

Career planning is defined as the process of identification of actions needed for career development. This kind of tasks, specific to career management, seems to be a crucial aspect in the context of sport career termination (Rogers & Creed, 2011). Accordingly, individuals with high self-efficacy tend to better define career goals and consequently plan their career (Lent & Brown, 2013).

Previous research also pointed that individual differences and the level of consciousness (Rogers et al., 2008) about retirement has implications on the level of career planning and consequently on retirement. In line with that, the level of athletic identity is another important internal factor that could contribute to explain career planning through variations in the level of consciousness about career development and retirement (Martin et al., 2014). High levels of athletic identity may lead to an overinvolvement and commitment in sports practice, with reduction of attention to other social and career aspects, consequently decreasing the consciousness about career management and development (Cecić-Erpič et al., 2004). Also, variations in emotional stability associated with career choice, humor disorders, substance abuse, unrealistic expectations regarding a sports related career and lack of preparation for life and work outside of the sports world were reported (Brown et al., 2000; Lally & Kerr, 2005; Stambulova & Ryba, 2014). In fact, previous research with Olympic athletes revealed that athletes with strong athletic identity tend to not plan career retirement with consequences for life after sports (Torregrosa et al., 2015). The intensity of athletic identity varies in association with past relationship to sports and current athletic experiences, as well as the athlete's personal experiences with athletic failures and successes (Horton & Mack, 2000). Thus, further research is required to really understand the link between self-efficacy, career goals, athletic identity, and career planning to better understand the individual aspects that could positively or negatively influence the process of career planning.

1.3.2 Pre-retirement planning and Key Career Indicators (KCI)

Transversal to many sports and countries, the age of retirement was identified as one of the factors that most influence the athletic retirement (Dimoula et al., 2013; Park et al., 2013; Torregrosa et al., 2015). It was well reported that elite athletes and in particular, football players, try to maintain their athletic activity as long as possible delaying the moment of retirement. This could be related to the high athletic identity and the lack of consciousness about the future and with the immediate perspective to maintain the financial support and social status (Carapinha, Torregrossa, et al., 2019; Ekegren et al., 2018; Martin et al., 2014). The lack of ideas about career retirement and the need to maintain the focus on athletic performance is natural and entirely justified at the beginning of a sports career (Côté et al., 2007). However, approximately 45% of athletes do not project the retirement over their entire career (Cecić-Erpič et al., 2004) and only start to consider it when their performance has stagnated or decreased (Torregrosa et al., 2004). In fact, previous research revealed that most elite-level athletes in the United Kingdom (North & Lavalley, 2004), and specifically elite football players in Portugal (Carapinha, Torregrossa, et al., 2019), do not plan and do not recognize the importance of planning for career retirement. The lack of

consciousness about pre-retirement planning could contribute to difficulties in adaptation to a new life, including negative emotional and social reactions. Furthermore, the delay in retirement also influences/influenced the capability of players to/or not to maintain the professional status and the level at the end of their career with consequences on the expectations of players about the future and the acceptance of the retirement process (Park et al., 2013; Torregrosa et al., 2004). Following the last position of the International Society of Sport Psychology for career development and transitions of athletes (Stambulova et al., 2020), further research is required to identify the Key Career Indicators (KCI) that characterize changes in each stage of athletic development (e.g., evaluation of players' levels of achievement, number of years in each level...) and its implications for the process of career development and retirement (Battocchio et al., 2016; Stambulova & Wylleman, 2019). To the best of our knowledge no study exists in football that characterizes and identifies some KCI that help players to consciously manage their choices to potentiate the athletic stages, the time, the longevity, and the age or even the level of career termination. The KCI should be considered the mediators of a career plan from the beginning of an athletic career in Association Football, to guide the process of career development, and the management of different career transitions, including the transition to the career end.

2. Objectives

Based on the above, this work aimed to identify the KCI in the various stages of athletic development and their influence as predictors of the competitive level of retirement, and longevity of the athlete's career. Also, to better understand the individual characteristics that define the career planning process, the relationship between athletic identity, self-efficacy and career goals was analyzed.

In view of this, the objectives of this investigation were:

- To describe and identify the weight of the KCI from the mastery stage on the competitive level of retirement (professional vs. non-professional) of Portuguese football players.
- To propose a predictive model that links players' athletic development and the retirement age according to the HAC-model (Initiation/Development, Mastery, and Discontinuation) of Portuguese football players.
- To propose a model to examine the role of self-efficacy, career goals and athletic identity on career planning of professional football players.

To this end, this work was organized by chapters as follows:

Chapter 1 is composed of a general introduction where the framework of the work was carried out, and in chapter 2 we present the objectives of the thesis. Despite their methodological differences both chapter 3 and 4 aimed to identify some KCI that help to predict the competitive level of retirement and the longevity of sports career of Portuguese football players. In chapter 5 the role of self-efficacy, career goals and athletic identity on career planning of professional football players was evaluated. In chapter 6 it a general discussion was presented, of the results obtained from the three studies carried out. Finally, in chapter 7 we present a summary of the main conclusions for this thesis.

3. Identification of key career indicators in Portuguese football players

Monteiro, R., Monteiro, D., Nunes, C., Torregrossa, M., & Travassos, B. (2020). Identification of key career indicators in Portuguese football players. *International Journal of Sports Science & Coaching*, 15(4), 533-541.

3.1 Introduction

In the sports context, athletic retirement has been one of the most popular topics of career transitions research worldwide (Knights et al., 2016; Stambulova et al., 2009). The purpose is to identify and evaluate the best predictors that explain the athletic retirement and the quality of athletic retirement in different sports (see Park et al., 2013 for a review). However, in football and in general in team sports, the analysis of career development and athletic retirement is far from being a hot topic of research (Carapinha, Mendes, Carvalho, et al., 2019; Ekengren et al., 2018). Despite the well-known and reported problems that football players faced at the end of their athletic career (Bailey, 2014; Sanders & Stevinson, 2017; van Ramele et al., 2017), a recent systematic review on athletic retirement in football only reported eight studies in last 18-years (Carapinha, Mendes, Carvalho, et al., 2019) and despite some similarities between studies, it was highlighted that the motives of retirement are dependent on the country in analysis (Carapinha, Mendes, Carvalho, et al., 2019; Carapinha, Torregrossa, et al., 2019).

Interestingly, the common factor of retirement between all the countries and one of the most reported was age. Similar results were obtained in other sports, with the age of retirement being one of the factors that most influence the athletic retirement (Dimoula et al., 2013; Park et al., 2013; Stambulova et al., 2009; Torregrossa et al., 2015). It was well reported that elite athletes and, in particular, football players try to maintain their athletic activity as long as possible delaying the moment of retirement. This issue is also related to the high athletic identity and the lack of career planning reported by almost all elite athletes (Demulier et al., 2013; Dimoula et al., 2013; Ekengren et al., 2018) and, in particular, elite football players in Portugal (Carapinha, Torregrossa, et al., 2019). Indeed, the behavior of elite football players to delay the moment of retirement could be related to the lack of consciousness about the future and with the immediate perspective to maintain the financial support and social status (Demulier et al., 2013; Martin et al., 2014). However, the lack of consciousness about career planning and the delay in retirement could contribute to difficulties in adaptation to a new life, including negative emotional and social reactions (Demulier et al., 2013; Stambulova et al., 2009; Wylleman et al., 2004). Furthermore, the delay in retirement also influences/influenced the capability of players to/or not to maintain the professional status and the level at the end of their career with consequences on the expectations of players about the future and the acceptance of the retirement process (Demulier et al., 2013; Stambulova et al., 2009; Wylleman et al., 2004). Thus, there is a need to better understand the retirement process and to improve the analysis of the athletic career path of players. In agreement with the Holistic Athletic Career Model, there is a need to better understand what characterizes each athletic stage and how it influences the retirement process.

3.1.1 The Holistic Athletic Career Model

In last years, the Holistic Athletic Career Model (Wylleman et al., 2013) was suggested as a more adequate approach to understand the athletic retirement as part of a process of players' development. Over their entire career, the changes that athletes experience afford several individual challenges, such as complex emotions, negotiation of changes in their identity, as well as, the disruption of their social network (Brown et al., 2018). This model considers that an

athletic career is defined by different stages of development that integrate other life domains (Torregrosa et al., 2015). Four main stages (Initiation, Development, Mastery and Discontinuation) and six normative athletic transitions (the beginning of sports specialization, start of intense training in a sport, high achievement, and adult sports, beginning of professional sports, peak performance to the end of a sports career, and the end of athletic career) were identified as part of the development of the athletic career (Ekengren et al., 2018; Stambulova & Ryba, 2014).

3.1.2 Stages of Football Players Career Development

Looking at initiation and development stages, recent research revealed that the career paths in German youth national teams is characterized by eight different career paths (Schroepf & Lames, 2018). Each path is characterized by specific relations across different variables, namely: the number of years as youth players, the appearances in the national teams, or being or not professional. A recent retrospective study with Portuguese international football players also revealed that over the last ten years the career path started earlier with an increase in the length of initiation and development stages (increase in the number of years as youth players) and a decrease in the length of the mastery stage (decrease in the number of years as professional players) (Carapinha et al., 2018).

Regarding the mastery stage, in handball (Ekengren et al., 2019) and in NHL (Battochio et al., 2016), it was highlighted that the mastery stage is characterized by four major career stages related to the level of performance of practice (i.e., access to semi-professional or professional sport, developing as a professional player, reaching the elite, and maintaining the professional status). Both studies reinforce that the mastery stage lies between the normative transitions from junior to senior and retirement and integrates different non-normative transitions that players face during their senior career (Ekengren et al., 2019). During all the stages, and particularly in the mastery stage, the athletic path is nonlinear and subtle changes in the career development could potentiate unexpected career paths (Schroepf & Lames, 2018). Likewise, it was stated that career pathways were not consciously defined along with the career (Demulier et al., 2013) and did not consider a previous plan of development, in line with the reported in football (Carapinha, Torregrossa, et al., 2019).

Previous research highlighted the relationship between career plan, career self-efficacy and career goals as a process to improve the retirement process (Demulier et al., 2013). However, to the best of our knowledge no study exists in football that characterizes and identifies some Key Career Indicators (KCI) that help players to consciously manage their choices to potentiate the mastery stage and the time of career termination. In line with previous research (Schroepf & Lames, 2018), the identification of the relevant KCI such as the age and competitive level at the moment of promotion to senior player, the number of seasons and total of games as senior player, the age of peak performance, and the number of games in retirement season are paramount to consciously explain the path of career development and retirement. Further research is required to understand the weight of each KCI on career development and retirement of football players.

Thus, the purpose of this study was to describe and identify the weight of the KCI from the mastery

stage on the competitive level of retirement (professional vs. non-professional) of Portuguese football players. It was our expectation to identify some KCIs that help to predict the competitive level of retirement of Portuguese football players. Such results will be of major importance for the future definition of management and support programs of players' careers.

3.2 Method

3.2.1 Participants

Public data about the sport career path of three thousand five hundred ($n=3.500$) retired Portuguese football players born between 1950 and 1989, registered on Portuguese Football Federation and on a private digital website platform (www.zerozero.pt) were considered for analysis.

3.2.2 Data collection

The tracking of the mastery stage of each player was followed since the age of the first registration as senior player until the end of the career. The data to identify Portuguese football players' career was collected with the support of zerozero website platform. Five percent of the data were subjected to a comparison with data from the Portuguese Football Federation about players' careers using Cohen's Kappa index (k) (James et al., 2007). The results revealed a very good agreement between data ($k = 0.97$).

3.2.3 Data analysis

The data from the athletic career of Portuguese football players (see Table 1) was categorized according to the KCI defined for mastery stage of the athletic career (Wylleman et al., 2013). KCI from the Mastery stage were identified as independent variables while the level of competitive retirement was identified as the dependent variable.

Subsequently, a descriptive analysis of the KCI according to the competitive level of retirement (professional or non-professional) and a multivariable binary logistic regression model were performed to assess the relationship between the KCI from the mastery stage (age at first registration as senior player, the age of the last best result achieved, total number of games as senior player, number of games in retirement season, number of seasons as senior player, first senior competitive level, retiring age) and the competitive level of retirement of football players. The competitive level of retirement was defined according to the possible competitive levels achieved by Portuguese players: a) Professional players - (1) Elite – players that reached the national team as senior players; (2) 1st Pro – players that reached the 1st league in Portugal; (3) 2nd Pro - players that reached the 2nd league in Portugal; and b) Non-professional players - (4) Non-Pro – players that played in nonprofessional divisions in Portugal.

Table 1. Description of the Key Career Indicators of the mastery stage of Portuguese football players

| Stage | Variable | | Description |
|------------|--|-----------------|--|
| Mastery | Age of first registration as senior player | AFRSP | Were considered the age that an athlete starts to play in seniors. It allows to identify the age of transition from junior to senior. |
| | First senior competitive level | FSCL | Were considered the competitive level in which an athlete starts to play in seniors. It allows to identify the competitive level at the moment of transition from junior to senior: -elite (players who achieved national team); -first professional level (achieved the first national league); -second professional level (achieved the second national league); and -non-professional level |
| | Number of seasons as senior player | NSSP | Were considered the total number of seasons that a football player played as senior |
| | Total number of Games as Senior player | NTGSP | Were considered the total number of games that a football player played as senior |
| | Number of Games in retirement Season | NGRS | Were considered the total number of games that a football player played in the retirement season. |
| | The age of the last best result achieved | LBRAA | Were considered the players' age at the time of the last season at the peak performance (higher competitive level achieved) |
| | Retiring Age | RA | Were considered the age at the time a football player ends his sports career |
| Retirement | Retirement Level | Competitive RCL | Were determined two competitive levels in the retirement season: (1) professional level and (2) non-professional level. |

Only the variables whose univariate test was significant ($p < .05$) were selected to the model. The nominal KCI were analyzed through the chi-square test and the continuous variables by the *Mann-Whitney U test* (since the assumptions underlying the use of the independent samples *t-test* were not verified) with the correspondent effect sizes (*Eta squared*, η^2) (Fritz et al., 2012) The interpretation of the effect size using η^2 was based on the following criteria (Cohen, 2013): $< .01$ no effect, 0.01-0.04 small effect, 0.06-0.11 intermediate effect and 0.14-0.20 large effect.

The Forward stepwise (Likelihood Ratio) selection method was considered, and the results were reported by odds ratio (OR) estimates and their 95% confidence intervals (CI). To evaluate the model's power of explanation the *Nagelkerke's R²* was used. Its interpretation as an effect size measure was made based on the following criteria: 0.02–0.13 small, 0.13–0.26 medium, and >0.26 large effect size (Kotrlík et al., 2011). The model's goodness of fit was assessed through the Hosmer-Lemeshow test and the area under the curve (AUC) through Receiver Operating Characteristic (ROC) was used to evaluate the discriminant capacity of the model. The ROC curve was performed using the predicted probabilities of each variable. All the statistical analyses were performed using SPSS 24.0 and statistical significance for rejecting the null hypothesis was set at $p < .05$.

3.3 Results

3.3.1 Characterization of Mastery Stage

The age of first registration as senior of Portuguese football players is around 18 years old and the number of seasons as senior players is around 15 years. During their entire career, Portuguese football players played around 33 games (professional 234 and non-professional 24) and any

game in the retirement season (professional 9 and non-professional 0). The age of the last best result achieved was at around 27 years old (professional 31 and non-professional 26). Usually, the age of retirement is around 33 years (See Table 2).

3.3.2 How does Mastery Stage Influences the Competitive level of retirement of Football Players (professional or non-professional)?

Results revealed significant differences for all KCI ($p < .05$) with exception to the age at first registration as senior player ($p = .06$) and retiring age ($p = .97$) between professional and the non-professional level at the moment of retirement. In addition, effect size results also revealed no effect for the number of seasons as senior player (see Table 2).

Table 2. Descriptive data of the Key Career Indicators from the mastery stage according with the retirement competitive level (professional or non-professional)

| | Competitive level of retirement dichotomic | | | <i>p-value</i> #1 | η^2 |
|--|--|--|--------------------------------------|-------------------|-------------------------------|
| | Total <i>n</i> = 3467 Md (IR) | Professional <i>n</i> =499 Md (IR) | Non-Pro <i>n</i> =2968 Md (IR) | | |
| Age at first registration as senior player | 18 (0) | 18 (0) | 18 (0) | .06 | 0.00 (No effect) |
| Number of seasons as senior player | 15 (6) | 15 (4) | 14 (6) | .01 | 0.00 (No effect) |
| Total number of games as a senior player | 33 (134) | 234 (225) | 24 (85) | < .001 | 0.21 (Large effect) |
| Number of games in retirement season | 0 (2) | 9 (16) | 0 (0) | < .001 | 0.15 (Large effect) |
| The age of the last best result achieved | 27 (8) | 31 (6) | 26 (8) | < .001 | 0.07 (Intermediate effect) |
| Retiring age | 33 (6) | 33 (4) | 33 (6) | 0.97 | 0.00 (No effect) |

Note.#1 Mann Whitney test; Md=median; IR=interquartile range

The analysis of the relationship between the first senior competitive level and the last competitive level achieved by the football players revealed a significant result ($p < .001$) (see Table 3). The first competitive level as senior player influences the competitive level of the retirement of players. Considering the four competitive levels at the moment of retirement, 20% of players who enter in mastery stage as elite players, 69.4% as first pro players, and 74.1% as second pro players, finish their career as non-professional players. Also, 92.3% of the players that enter in mastery stage as non-professional finished their career as non-professional players.

Table 3. Relationship between competitive level of retirement (dichotomic) and first senior competitive level

| | | Competitive level of retirement (dichotomic) | | | <i>p-value</i> 2 |
|--------------------------------|---------------------|--|--------------------------------------|----------------------------------|------------------|
| | | Total <i>n</i> =3467 (100%) | Professional <i>n</i> =499 (14.4) | Non-Pro <i>n</i> =2968 (85.6) | |
| First senior competitive Level | Elite | 5 (0.1) | 4 (80.0) | 1 (20.0) | < .001 |
| | 1 st Pro | 592 (17.1) | 181 (30.6) | 411 (69.4) | |
| | 2 nd Pro | 510 (14.7) | 132 (25.9) | 378 (74.1) | |
| | Non-Pro | 2360 (68.1) | 182 (7.7) | 2178 (92.3) | |

Note. #2 – Chi-Square test (Pearson Chi-square);

In the multivariable binary logistic regression model, the independent variables age at first registration as senior player and retiring age were excluded from the model ($p = .06$). The overall

model presents a well-fitting value ($p_{\text{Hosmer-Lemeshow}} > .05$), a good correct global classification (90.5%) and its discriminant capacity is also quite good with the AUC ranging between .905 - .949. The model accounts for 51.1 % of the explanation for the competitive level of retirement (*Nagelkerke* $R^2=0.512$), corresponding to a large effect size (see Table 4).

The results revealed that for each additional season played in the mastery stage, the chances of finishing their career as a professional player decreased by 26.9% ($OR = 0.731$, $IC_{95\%} = [0.695-0.768]$). The analysis of the total number of games as senior player revealed that for each additional game played during the master stage, the chance to finish the career as a professional player increases by 1% ($OR=1.010$, $IC_{95\%} = [1.008-1.011]$). Interestingly, for each additional game played during the retirement season, the chance to finish the career as a professional player increases by 6.8% ($OR=1.068$, $IC_{95\%} = [1.053-1.083]$) (see Table 4).

Regarding the age of the last best result achieved, a player who ensured one year more has 20.3% more chance to finish the career as professional when compared with a player who ensured “the age of the last best result achieved” one year earlier ($OR=1.203$, $IC_{95\%} = [1.156-1.252]$) (see Table 4).

At the end, the analysis of the relationship between the first senior registration level and the competitive level of retirement revealed that a player who starts the Mastery stage in the elite level has 4.6 times more chances to finish his career as a professional when compared with a player who starts as a non-professional ($OR = 4.624$, $IC_{95\%} = [0.382-55.958]$). A player who starts in the first pro level has 3.5 ($OR = 3.516$, $IC_{95\%} = [2.531-4.885]$) more chances to finish his career as a professional when compared with a player who starts as a non-professional, while a player who starts in the second pro level has 2.8 ($OR = 2.839$, $IC_{95\%} = [2.042-3.946]$) more chances to finish his career as a professional when compared with a player who starts as a non-professional (see Table 4).

Table 4. Estimated regression coefficients from binary logistic regression analysis, only for significant variables (Competitive level of retirement as dependent variable)

| Variables | B | OR (CI 95%) | p | AUC (CI 95%) |
|--|--------|-------------------------------|--------|---|
| The age of the last best result achieved | 0.185 | 1.203 (1.156-1.252) | < .001 | .949 (.941 - .957) |
| Number of seasons as senior player | -0.314 | 0.731 (0.695-0.768) | < .001 | .905 (.891 - .920) |
| Total number of games as a senior player | 0.010 | 1.010 (1.008-1.011) | < .001 | .949 (.941 - .957) |
| Number of games in retirement season | 0.066 | 1.068 (1.053-1.083) | < .001 | .905 (.891 - .920) |
| First senior registration level | | | | |
| Non Pro ^b | | 1 | | |
| Elite | 1.531 | 4.624 (0.382-55.958) | .23 | .942 (.932 - .951) |
| 1 st | 1.257 | 3.516 (2.531-4.885) | < .001 | .949 (.941 - .957) |
| 2 nd | 1.043 | 2.839 (2.042-3.946) | < .001 | .905 (.891 - .920) |
| Nagelkerke $R^2 = 0,511$ | | Hosmer-Lemeshow test (p=.312) | | Correct global classification= 90.5% |

Note. OR - Odds ratio; ^b Reference category; AUC - Area under the ROC curve

In order to improve the understanding of previous results, some case studies of players' career development and termination are presented in Table 5. For example, player 1 (P1) and player 2 (P2) maintain a high level of practice (participation in the national team) until the end of their career. However, while in his last season P1 only performed two games, P2 maintained a regular practice with 45 games played in his retirement season. However, both have decided to retire as

professional players in highly competitive level. While the results of P1 are completely in agreement with the presented model, P2 is a little bit different due to the decision to retire from the competition even with a high number of games in the retirement season. In opposition, player 3 (P3), player 4 (P4) and player 5 (P5) achieved their peak performance (higher competitive level achieved) at a young age, and due to a transference to other clubs in Portugal or in another country could not maintain the same level of performance or even achieve again the same high level of performance. In line with the proposed model, the sooner the high level was achieved without the maintenance of performance in subsequent years, the higher the chance to finish the career as a non-professional. Both of P3, P4, and P5 ended their career as non-professionals unlike P1 and P2. Interestingly, despite ending the career in younger ages and in a non-professional competitive level, P3 and P4 also performed a low number of games in retirement season even in non-professional levels. The number of games of P5 in retirement season was high but in a non-professional team.

Table 5. Case studies of players' career development and termination

| Player | 1 st competitive level | Number of seasons as senior | The age of the last best result achieved | Number of games in retirement season | Age of retirement | Competitive level of retirement |
|--------|-----------------------------------|-----------------------------|--|--------------------------------------|-------------------|---------------------------------|
| P1 | Professional | 20 | 37 years | 2 | 38 years | Professional |
| P2 | Non-professional | 18 | 36 years | 45 | 36 years | Professional |
| P3 | Professional | 21 | 25 years | 7 | 40 years | Non-professional |
| P4 | Professional | 17 | 31 years | 12 | 35 years | Non-professional |
| P5 | Professional | 14 | 22 years | 38 | 29 years | Non-professional |

3.4 Discussion

Following previous research of career retirement of Portuguese football players (Carapinha, Torregrossa, et al., 2019), and considering the Holistic Athletic Career Model (Wylleman et al., 2013), the aim of this study was to describe and identify the weight of the KCI of the mastery stage of Portuguese football players on the competitive level of retirement (professional vs. non-professional). Based on our expectations, it was clear that the KCI first senior registration level, number of seasons in mastery stage, number of total games as senior player, number of total games in retirement season, and the age of the last best result achieved, contribute to explain and predict the competitive level of retirement of Portuguese football players. Alfermann and Stambulova (2007) described the successful retirement as a positive state that promotes an easy transition out of the sport, thanks to the effective mobilization of the resources to promote a voluntary retirement. The monitoring and analysis of such KCI over the entire career could improve the consciousness of players and managers about how to prospectively manage their careers and prospectively prepare the moment of retirement successfully (Demulier et al., 2013).

3.4.1 Characterization of the Mastery Stage

In general, the Portuguese football players start the mastery stage at around 18 years of age without a significant difference between groups. This result is clearly influenced by the guidelines of football competitions and in line with previous research both in football (Schroepf & Lames, 2018) and handball (Ekengren et al., 2018).

During their entire career, Portuguese football players played, on average, 93 games and only three games in the retirement season. That is, the evolution of the number of games played in each season or the deselection trend could help players and managers to understand the evolution of their career and the intention of players to prepare their retirement (Martin et al., 2014). Deselection is one of the motives most reported in involuntary retirement by Portuguese football players (Carapinha, Torregrossa, et al., 2019) with the associated difficulties in adaptation to termination, including negative emotional reactions as well as difficulty with accepting one's new life (Stambulova et al., 2009; Wylleman et al., 2004). Football players that retired by deselection were faced with the difficult decision to terminate their sporting careers prematurely and to start another professional career (Moesch, 2012). More bench time athletes were words used by Butt and Molnar (2009) to characterize these athletes. Therefore, the control of the athlete's decision to drop out the practice of sport seems to be associated with uncontrollable causes (e.g., deselection), which may lead to permanent dropout (Butt & Molnar, 2009). Thus, the idea of looking to these variables with further attention is to transform possible uncontrollable variables and decisions in more controlled and conscious ones or at least variables that need to be attended by the players over their career (Demulier et al., 2013). In this regard, the managers and players need to know how to look to the tendencies of career development during the mastery stage to prepare the career termination and consequently their new career out of sports. Actually, this is a hot topic in sports and in society right now. Stambulova and Wylleman (2014) refereed that career planning interventions are fundamental on assisting athletes to increase self-awareness, to define realistic career goals and prepare the forthcoming career steps and transitions.

The participants in our study revealed a lower number of seasons in mastery stage than the Brazilian players (Agresta et al., 2008), or the elite Portuguese football players (Carapinha, Torregrossa, et al., 2019). However, the study of Carapinha, Torregrossa, et al. (2019) only considered 90 Portuguese elite players and in this study, a very large sample of players from different levels was considered. Also, the same authors revealed that, for elite football players, the mean number of seasons in the mastery stage has decreased in the last three decades, approaching our results. It looks to be a downward trend in the length of the mastery stage in Portuguese football.

In general, Portuguese football players achieved their last best result at around 27 and finish their careers at around 33 years of age. Interestingly, the age of career termination was not influenced by the competitive level of retirement. Regarding the age of the last best result achieved (peak performance age), previous researches in football revealed an age of around 25 (Barreira, 2016) and between the ages 25-27 (Dendir, 2016), while in track and field peak performance was achieved at around 25 to 26 years of age. However, further research is required in order to really identify trends in the age of the last best result achieved in different sports and according to reliable criteria (Allen & Hopkins, 2015). Our sample of Portuguese football players retired with a similar age of Kenyan and English footballers (Drawer & Fuller, 2002; Rintaugu et al., 2016), earlier than Brazilian footballers/ basketball players (Agresta et al., 2008), but later than other Greek and Spanish elite athletes in different Olympic sports (Dimoula et al., 2013), and the football players in the four major European professional football leagues (Dendir, 2016). The

results seem to be in line with the previous research of Carapinha et al. (2018) that revealed that the retiring age of Portuguese football players has decreased in the last three decades from 36 to 34. This decrease in the age of retirement cannot be considered positive or negative, because it does not influence the competitive level of retirement. However, according to the Portuguese football players, age is one of the main variables for involuntary retirement (Carapinha, Torregrossa, et al., 2019). With the decrease in the age of retirement, the time to accept the retirement and the time to prepare and develop a new career also decreases. Thus, it could contribute to difficulties in adaptation to termination, including dissatisfaction with the sudden change and negative emotional reactions to it, as well as difficulty with accepting one's new life (Stambulova et al., 2009; Wylleman et al., 2004).

3.4.2 How does the Mastery Stage Influences the Competitive level of retirement of Football Players (professional or non-professional)?

Results revealed that apart from the age of retirement and age at first registration as senior player, all the KCI considered from the mastery stage influenced the player's competitive level of retirement of players. For example, regarding the first competitive level as senior player, the results revealed that 20%, 69.4%, and 74.1% of the players who enter the mastery stage as a professional, elite, first pro and second pro-competitive level, respectively, finish their career as non-professional players. Additionally, the transition from junior to senior is not only a critical moment to avoid dropout (Stambulova et al., 2009), but is also crucial for the development of the mastery stage of football players, with consequences in the competitive level of retirement. Hollings et al. (2014) pointed out the initial senior success as one of the reasons for the athlete being successful in senior sport. In opposition to the frequent strategies adopted by football players (Carapinha, Torregrossa, et al., 2019), all the decisions regarding the first club as senior players, the existence of a dual career, or even the definition of a lifetime career as professional, should be accounted for the definition of the players' career path. Understanding the career as a process that could be planned and managed in opposition to a sum of positive or negative events that could occur due to external factors, allows the players to perceive the process of retirement as much less difficult (Torregrossa et al., 2004; Wylleman et al., 2013).

Similarly, the results revealed that for each additional season played in the mastery stage, a decrease in the chances to finish the career as professional player was observed. However, in the opposite view, the analysis of the total number of games played in the mastery stage revealed that for each additional game played, an increase in the chances to finish a career as a professional player was observed. Beyond that, an important issue to maintain the career in a high level is the participation in a high number of games throughout the seasons. Therefore, the evolution of the number of games per season could be a key issue to manage the career and prospectively evaluate the possibilities for the future. Certainly, the conscience about the tendencies of selection or deselection (Butt & Molnar, 2009) during seasons are crucial to maintain the expectations for the future and prospectively evaluate the possibilities of a career as a continuous process (Stambulova et al., 2009; Wylleman et al., 2004).

At the end, the results revealed that the age of the last best result achieved over the mastery stage influences the player's competitive level of retirement. Accordingly, the later the best result was achieved in mastery stage, the greater the chances to end the career as a professional player. Based on previous research, it was observed that in the analysis of the lifespan of French elite male athletes (Debois et al., 2015) the career termination was facilitated according to the athletes' achievements during their sports career. Feelings of self-achievements and career goals were revealed as a strong predictors of the quality of retirement of elite athletes (Demulier et al., 2013). However, further research is required to link the level of achievements with the competitive level of retirement of players and the quality of retirement.

The current research presents some limitations due to the difficulty to identify the most reliable variables as predictors of the mastery stage of the athletic career. Further research is required on this topic in the future for the characterization of the different stages of an athletic career in different countries. There is no doubt that the analysed KCI, particularly the trend in the number of games played over seasons, and the age of the last best result achieved influence and help to predict the last years of the career path of Portuguese football players. Thus, managers and players should use them for the future as predictors of sports career development, allowing to prepare the image of retirement (Torregrossa, et al., 2015), and voluntary termination decisions. In line with what the case studies revealed, career management is a complex process with different pathways. There is no single way to achieve a successful career management. The KCI should be used to improve the consciousness of players and managers about career achievements, helping to prospectively prepare the moment of retirement.

3.5 Conclusion

The main purpose of the current study was to characterize the mastery stage of Portuguese football players and understand how the development of the mastery stage in football players' career influences the competitive level of retirement. The results highlighted reliable variables for prospective analysis of the athletic career of football players, allowing to promote a smooth career termination. Furthermore, the results demonstrated how Mastery stage influence the retirement level of football players. The relationship observed between the variables from the mastery stage and the competitive level of retirement have important implications on the definition of management and support programs of players' careers.

4. Modelling athletic development of football players: Implications for retirement

Monteiro, R., Monteiro, D., Torregrossa, M., & Travassos, B. (In press): Modelling athletic career of football players: Implications for career management and retirement. *International Journal of Sports Science & Coaching*.

4.1 Introduction

Nowadays, athletes' career termination is considered a process that needs to be managed over lifespan to prevent negative consequences for the former players' life (Knights et al., 2019; Park et al., 2013). To improve knowledge about this transition process, key factors were identified that constraint the quality of life of athletes after career termination. For example, the voluntariness of sports career retirement, the level of athletic identity, the evaluation of athletic achievements, and the pre-retirement plans were identified as some of the key aspects that allow athletes to achieve a better career retirement (Dimoula et al., 2013; Knights et al., 2016; Park et al., 2013).

One of the main factors that constraint the psychological, health, social, and economic problems that players face at the end of their careers is related to the lack of planning and preparing for retirement (Knights et al., 2019; Stambulova et al., 2009). The lack of ideas about career planning and retirement and the need to maintain the focus on athletic performance is natural and entirely justified at the beginning of a sports career (Côté et al., 2007). However, approximately 45% of athletes do not project retirement over their entire career (Cecić-Erpič et al., 2004) and only start to consider it when their performance stagnates or decreases (Torregrossa et al., 2004). Indeed, throughout their career, most elite athletes create a robust athletic identity (Dimoula et al., 2013; Ekengren et al., 2018) that contributes to improve their actual athletic performance day by day; however, without any project of career and life management. Consequently, the lack of plans and consciousness of career retirement weakens the relationship between career achievements. At the same time, prospective planning seems to promote lengthy careers, with an increase in the retirement age and career termination quality (Babic et al., 2019; Knights et al., 2019).

For example, in Portugal, football is the most popular sport with around two hundred thousand players in total and two thousand professional players. However, in line with other countries, elite football players in Portugal do not plan or participate in any pre-retirement program and do not recognize the importance of planning for career retirement (Carapinha et al., 2019). More than that, in Portugal, only in recent years programs were implemented to support elite athletes. Some of such programs come from the Football players Union but remain only as single programs without a clear strategy, and others grow from some individual initiatives of elite players such as the program "My cause" promoted by the first author of this study. "My cause" mentorship program has the goal to sensitize youth and elite football players to the problems of career retirement and particularly to the lack of career management and planning for retirement. However, one of the biggest issues that such programs face is the lack of information regarding contextualized football players career that help to characterize the athletic career and the identification of the variables that support their understanding of the different stages of their career (Monteiro et al., 2020).

Based on the Holistic Athletic Career Model (HAC-model, Wylleman, 2019), players careers results from a sequence of phases, multiple events, and choices in a multilayer process of athletic, psychological, psychosocial, academic, vocational, financial, and legal issues. The HAC-model synthesized the athlete's career as a non-linear process and at the athletic level it is composed of four stages of development with the correspondent normative athletic transitions: *Initiation* in competition sports, starting from 6-7 years of age; *Development*, increase in the level of training

and competition, starting from 12-13 years of age; *Mastery*, transition to the senior level and participation at high competitive level, starting from 18-19 years of age; and *Discontinuation*, preparation of transition out of the sports career, starting from 28-30 years of age (Wylleman, 2019; Wylleman et al., 2013). Previous research predominately used such a model to characterize or analyse transitional challenges during each stage of the athlete's career (Wylleman & Rosier, 2016) and to develop general career framework models for specific contexts and sports (Battochio et al., 2016; Ekengren et al., 2018). In general, such research collected lifespan information about players' career experiences in order to identify the themes that describe the main occurrences in each career stage. With this approach the authors contextualized empirical models with indications about the particular needs of such athletes in their specific context. Using a similar approach, previous research has characterized the Development, Mastery, and Discontinuation stages, as well as the transitional challenges, faced by Portuguese football players to understand the process of retirement (Carapinha et al., 2019). However, based on these results, it was not possible to understand the relationship between the perception of players about their career stage and their actual stage in the life cycle of the athletes' career. For that, there is a need to identify some career indicators that describe and identify critical moments in the life cycle of the athletes' career. Following the last position of the International Society of Sport Psychology for career development and transitions of athletes (Stambulova et al., 2020), to improve the understanding of the career pathways of athletes until retirement, there is a need to identify and relate the career change events that support and characterize each stage of development.

Recently Monteiro et al. (2020) identified some Career Indicators (CIs) to characterize the athletic career and retirement. Particularly, the authors analysed the Mastery stage of players' athletic careers to evaluate the weight of each CI on the determination of the competitive level of retirement (professional vs. non-professional). Results revealed that the first senior registration level, number of seasons in the Mastery stage, total number of games as a senior player, total number of games in the retirement season, and the age of the last best result achieved contributed to explain and predict the competitive level of retirement of Portuguese Football players. In general, by each additional season played as a senior player, the chances the Portuguese players had of finishing their career as a professional player decreased 26.9%. Furthermore, a player who begins in senior at the elite level in comparison with a player that begins at the non-professional level, is 4.6 times more likely to terminate his career as a professional. In line with this approach, further research is required to identify the CIs that characterize each stage of development and their implications for the process of retirement (Battochio et al., 2016; Stambulova & Wylleman, 2019). More than the description of each stage of the players' career development, a formalization of a model that supports the understanding of changes in CI over the Initiation/Development, Mastery, and Discontinuation stages, for the understanding of the career retirement is required. Thus, the aim of this study was to propose a predictive model that links Portuguese Football players' athletic career stages and the retirement age according to the stages of the HAC-model (Initiation/Development, Mastery, and Discontinuation). Specifically, we intended to understand the direct and indirect associations between the CIs at different stages of the life cycle of athletes'

careers and the age of players' career termination to improve the management and development of more appropriate programs to support players' careers.

4.2 Method

4.2.1 Participants

Public data about all the retired Portuguese football players that played between 1960 and 2018 (Age = 32.70 ± 4.27 , number of years as football players = 17.51 ± 4.89) registered on a private digital website platform (www.zerozero.pt) was considered for analysis ($n = 3500$).

4.2.2 Data collection

Data was registered from the youth level until the end of each player's career, allowing the tracking of their athletic career path. It was registered and grouped according to stages of the athletic career (Wylleman, 2019): (a) Initiation/Development; (b) Mastery; (c) Discontinuation (see Table 1). The Initiation/Development stage was characterized through the CIs: (i) number of seasons as a youth player and (ii) number of seasons as a youth player in Top3 clubs (the best three clubs in Portugal according to the word clubs ranking in that time). The Mastery stage was characterized through the CIs: (iii) age of first registration as a senior player, (iv) number of seasons as a senior player, (v) number of seasons as a senior player in top 3 clubs, (vi) total number of games as a senior player, and (vii) age of the last best result achieved. The Discontinuation stage was characterized by the CIs: (viii) number of games in the retirement season, (ix) Discontinuation stage length and (x) retiring age (see Table 6 for a detailed description of each variable).

Five percent of the data was subjected to a comparison with data from the Portuguese Football Federation about players' careers using Cohen's Kappa index (k) (James et al., 2007). The results revealed an almost perfect agreement between data ($k = .97$).

Table 6. Description of the Key Career Indicators (KCIs) of the stages of athletic career of Portuguese football players

| Stage | Variable | | Description |
|---------------------------------|--|--------|--|
| Initiation / Development | Number of seasons as youth player | NSYP | Total number of seasons that a player played as a youth |
| | Number of seasons as youth player in top3 Clubs | NSYPT3 | Top three clubs in Portugal according to world clubs rankings https://iffhs.de |
| Mastery | Age of first registration as senior player | AFRSP | Age in which an athlete starts to play in seniors. It allows to identify the age of transition from junior to senior |
| | Number of seasons as senior player | NSSP | Total number of seasons that a football player played as a senior |
| | Number of seasons as senior player in top3 clubs | NSSPT3 | Top three clubs in Portugal according to world clubs rankings https://iffhs.de |
| | Total number of Games as Senior player | TNGSP | Total number of games that a football player played as a senior |
| | Age of the last best result achieved | LBRAA | Players' age at the time of the last season at the peak performance (higher competitive level achieved) |
| Discontinuation | Number Games in retirement Season | NGRS | Total number of games that a football player realized in the retirement season |
| | Discontinuation stage length | DSL | Number of seasons from the peak performance to the final stage |
| | Retiring Age | RA | Football player's age at end the sports career |

4.2.3 Statistical analysis

Means, standard deviation, range values, and bivariate correlations were analysed for the studied variables. In order to determine the required sample size, a power analysis using G*Power 3.1 (Faul et al., 2009), was performed with the following parameters: effect size $f^2 = .10$; $\alpha = .05$; statistical power = .95; and 9 predictors. The minimum sample size requirement of 245 was respected in the present study.

A preliminary analysis revealed that missing values are less than 0.1%, and consequently, *the* Full Information Maximum Likelihood estimation (FIML) was considered for analysis (Cham et al., 2017). Additionally, no outliers (univariate and multivariate) were identified. Finally, the collinearity diagnosis was checked using variance inflation factor (VIF) and tolerance tests and results revealed values between 1 to 2.13 for VIF and 0,23 to 0,52 for tolerance test, demonstrating acceptable conditions for regression analysis (Hair et al., 2019).

A path analysis through Maximum Likelihood (ML) in AMOS 23.0 was performed. The standardized direct and indirect effects on the outcome variable were analysed to test the effects across variables under analysis. Bootstrap resampling (1000 samples), with bias-corrected 95% confidence intervals (CI), was used to assess the significance of the direct and indirect effects. An effect is considered significant (at $\leq .05$) if the 95% CI does not include zero (Hayes, 2018; Williams & MacKinnon, 2008). Due to the over-sensitivity of the chi-square statistics on large samples and the model complexity (Hair et al., 2019), we considered several common goodness-of-fit indices to assess model fit, namely: Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA) and its respective Confidence Interval at 90% (CI 90%), and Standardized Root Mean Residual (SRMR). For CFI and TLI, values $\geq .90$ are typically interpreted to reflect adequate fit and for SRMR and RMSEA, values of $\leq .080$ are indicative of adequate fit to the data (Hair et al., 2019; Marsh et al., 2004). Effect sizes were evaluated as trivial (0 – 0.19), small (0.20 – 0.49), medium (0.50 – 0.79), and large (0.80 and higher), as suggested by Cohen (2013). The trivial effects between variables were neglected in the analysis.

4.3 Results

Descriptive results revealed that most of the bivariate correlations were significant (see Table 7). Specifically, the most positive and significant bivariate correlations occurred in the Mastery stage, namely: number of seasons as a senior player with the age of the last best result age achieved ($r = .53$) and number of seasons as a senior player in top3 clubs with number of total games as a senior player ($r = .55$) and between variables of Mastery and Discontinuation stages: number of seasons as a senior player with retiring age ($r = .93$). In contrast, the most negative and significant bivariate correlation observed was the age of the last best result achieved (Mastery stage) with discontinuation stage length (Discontinuation stage) ($r = -.60$).

Table 7. Means (M), Standard Deviations (SD), Ranges and bivariate correlations between variables

| Variables | <i>M</i> | <i>SD</i> | Range | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------|----------|-----------|-------|---------|--------|---------|-------|--------|--------|--------|--------|-------|
| 1. NSYP | 2.55 | 2.55 | 1-19 | - | - | - | - | - | - | - | - | - |
| 2. NSYT3 | .47 | 1.32 | 1-10 | .41** | - | - | - | - | - | - | - | - |
| 3. AFRSP | 17.94 | .690 | 15-19 | -.001 | -.013 | - | - | - | - | - | - | - |
| 4. NSSP | 14.18 | 4.25 | 5-27 | -.05** | -.023 | -.13** | - | - | - | - | - | - |
| 5. NSSPT3 | .53 | 1.94 | 1-18 | .052** | .24** | -.12** | .14** | - | - | - | - | - |
| 6. TNGSP | 92.96 | 25.67 | 1-919 | .023 | .18** | -.11** | .40** | .55** | - | - | - | - |
| 7. LBRAA | 26.85 | 5.07 | 16-44 | -.035* | .00 | .070** | .53** | .24** | .45** | - | - | - |
| 8. NGRS | 3.37 | 7.49 | 0-52 | .101** | .09** | -.00 | .10** | .23** | .45** | .32** | - | - |
| 9. DSL | 5.51 | 4.58 | 1-21 | -.019 | -.032 | -.081** | .28** | -.17** | -.17** | -.60** | -.25** | - |
| 10. RA | 32.70 | 4.27 | 21-45 | -.057** | -.042* | .019 | .93** | .10** | .33** | .52** | .06 | .35** |

Note. NSYP= number of seasons as a youth player; NSYT3= number of seasons as a youth player in top3 clubs; AFRSP= age at first registration as a senior player; NSSP= number of seasons as a senior player; NSSPT3= number of seasons as a senior player in top3 clubs; TNGSP= total number of games as a senior player; LBRAA= age of the last best result achieved; NGRS= number of games in the retirement season; DSL= Discontinuation stage length; RA= retiring age; * $p < 0.05$; ** $p < 0.01$

Results from the proposed model showed that the model fit the data: [$\chi^2(16) = 2820.489$; $p < .001$, CFI = 0.917, TLI = 0.907, SRMR = 0.059, RMSEA = 0.073 (CI 90% = 0.063, 0.083)]. In addition, the path analysis revealed that the majority of direct and indirect effects were significant (Table 8) and fluctuate between trivial to large. The most positive effects between variables of Initiation/Development and Mastery stages were: the number of seasons as a youth player positively predicted the age of the first registration as a senior player ($\beta = .58$; CI95% .563 to .600, $p = .001$); the number of seasons as a youth player in top3 clubs positively predicted the age of the first registration as a senior player ($\beta = .30$; CI95% .290 to .311, $p = .001$), the number of seasons as a senior player in top3 clubs ($\beta = .26$; CI95% .217 to .306, $p = .001$), and the total number of games as a senior player ($\beta = .22$; CI95% .178 to .256, $p = .001$).

Conversely, the most positive effects between variables from Mastery and Discontinuation stages were that the age of the first registration as a senior player positively predicted both the discontinuation stage length ($\beta = .56$; CI95% .539 to .576, $p = .001$) and the number of games in the retirement season ($\beta = .50$; CI95% .478 to .522, $p = .001$). Positive effects were observed between the number of seasons as a senior player and discontinuation stage length ($\beta = .53$; CI95% .518 to .546, $p = .001$); the total number of games as a senior player and the number of games in the retirement season ($\beta = .36$; CI95% .328 to .395, $p = .001$), as well as the age of the last best result achieved and the number of games in the retirement season ($\beta = .22$; CI95% .193 to .248, $p = .001$). Negative effects were verified between the age of the last best result age achieved and the discontinuation stage length ($\beta = -.58$; CI95% -.597 to -.566, $p = .001$).

Finally, the most positive effect on Discontinuation stages variables was observed between the discontinuation stage length and the retiring age ($\beta = .60$; CI95% .573 to .621, $p = .001$). Figure 2 synthesizes the direct effects between CIs according to the stages of the athletic career from the Holistic Athletic Career Model.

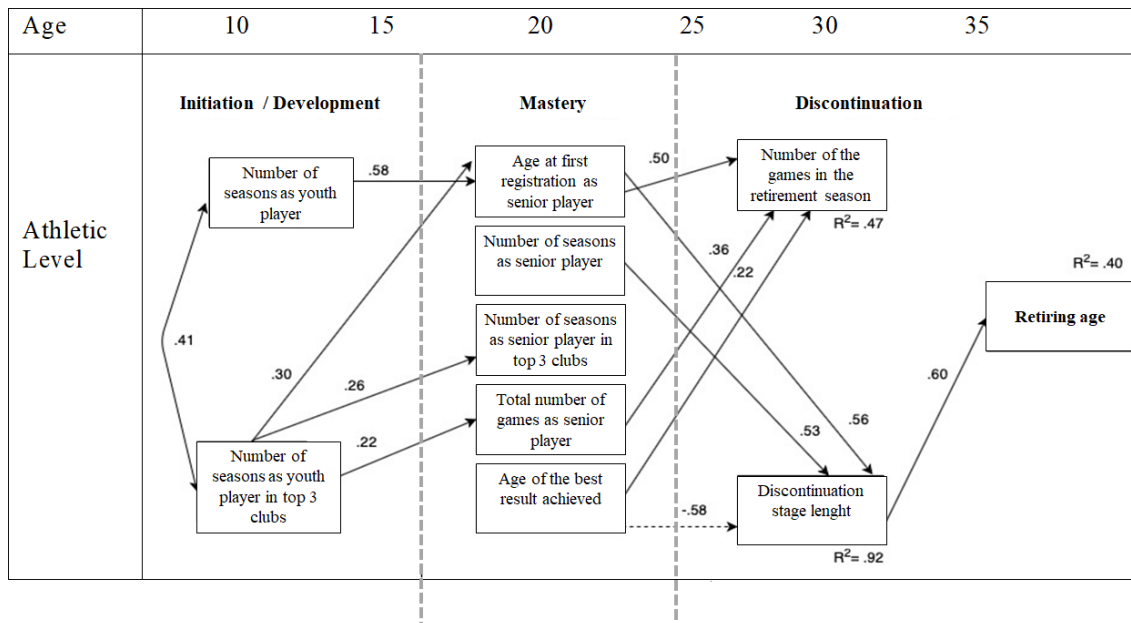


Figure 2. Direct effects between KCIs according to the stages of the athletic development and according to the Holistic Athletic Career Model

Analysis of the standardized indirect effects of regression analysis (Table 8), revealed positive effects across the studied variables. The effect sizes varied between trivial to small. Analysis between variables of Initiation/Development and Discontinuation stages revealed: the number of seasons as a youth player positively predicted discontinuation stage length ($\beta = .33$; CI95% .307 to .346, $p = .001$), the number of games in the retirement season ($\beta = .27$; CI95% .252 to .287, $p = .001$), and the retiring age ($\beta = .25$; CI95% .229 to .259, $p = .001$); the number of seasons as a youth player in top3 clubs positively predicted the number of games in the retirement season ($\beta = .21$; CI95% .190 to .147, $p = .001$); age at the first registration as a senior player positively predicted retiring age ($\beta = .42$; CI95% .400 to .447, $p = .001$), and the variable number of seasons as a senior player positively predicted retiring age ($\beta = .29$; CI95% .272 to .310, $p = .001$); the age of the last best result age achieved negatively predicted retiring age ($\beta = -.31$; CI95% -.322 to -.291, $p = .001$).

Collectively (direct and indirect effects), the model (see Figure 2) explains 47% ($R^2 = .47$) of the number of games in retirement seasons, 92% ($R^2 = .92$) of the discontinuation stage length, and 40% ($R^2 = .40$) of retiring age in the Discontinuation stage.

Table 8. Direct and indirect effects of regression analysis and variance explained among all variables

| Stage | Path | β | R ² | CI-95% | p |
|------------------------|----------------------|-------------|----------------|------------------------|-------------|
| Direct effects | | | | | |
| Initiation/Development | NSYP→AFRSP | .58 | .34 | [.563, .600] | .001 |
| | NSYP→NSSP | -.05 | .002 | [-.084, -.020] | .006 |
| | NSYP→NSSPT3 | -.06 | .003 | [-.079, -.029] | .001 |
| | NSYP→TNGSP | -.07 | .005 | [-.098, -.033] | .001 |
| | NSYP→LBRAA | -.04 | .002 | [-.076, -.008] | .048 |
| | NSYPT3→AFRSP | .30 | .09 | [.290, .311] | .001 |
| | NSYPT3→NSSP | -.002 | <.001 | [-.031, .030] | .943 |
| | NSYPT3→NSSPT3 | .26 | .07 | [.217, .306] | .001 |
| | NSYPT3→TNGSP | .22 | .05 | [.178, .256] | .001 |
| | NSYPT3→LBRAA | .02 | <.001 | [-.012, .049] | .285 |
| Mastery | AFRSP→DSL | .56 | .31 | [.539, .576] | .001 |
| | AFRSP→NGRS | .50 | .25 | [.478, .522] | .001 |
| | NSSP→DSL | .53 | .28 | [.518, .546] | .001 |
| | NSSP→NGRS | -.14 | .02 | [-.164, -.116] | .001 |
| | NSSPT3→DSL | -.06 | .004 | [-.078, -.038] | .001 |
| | NSSPT3→NGRS | -.09 | <.001 | [-.126, -.049] | .001 |
| | TNGSP→DSL | -.06 | .003 | [-.078, -.039] | .001 |
| | TNGSP→NGRS | .36 | .13 | [.328, .395] | .001 |
| | LBRAA→DSL | -.58 | .34 | [-.597, -.566] | .001 |
| | LBRAA→NGRS | .22 | .05 | [.193, .248] | .002 |
| Discontinuation | DSL→RA | .60 | .36 | [.573, .621] | .001 |
| | NGRS→RA | .18 | .03 | [.158, .203] | .002 |
| Indirect effects | | | | | |
| Initiation/Development | NSYP→DSL | .33 | .11 | [.307, .346] | .001 |
| | NSYP→NGRS | .27 | .07 | [.252, .287] | .001 |
| | NSYP→RA | .25 | .06 | [.229, .259] | .001 |
| | NSYPT3→DSL | .13 | .02 | [.110, .147] | .001 |
| | NSYPT3→NGRS | .21 | .04 | [.190, .147] | .001 |
| | NSYPT3→RA | .11 | .01 | [.102, .127] | .001 |
| Mastery | AFRSP→RA | .42 | .17 | [.400, .447] | .001 |
| | NSSP→RA | .29 | .08 | [.272, .310] | .005 |
| | NSSPT3→RA | -.05 | .002 | [-.067, -.037] | .001 |
| | TNGSP→RA | .03 | <.001 | [.014, .048] | .001 |
| | LBRAA→RA | -.31 | .10 | [-.322, -.291] | .001 |

Note. NSYP= number of seasons as youth player; NSYT3= number of seasons as youth player in top 3 clubs; AFRSP= age at first registration as senior player; NSSP= number of seasons as senior player; NSSPT3= number of seasons as senior player in top 3 clubs; TNGSP= total number of games as senior player; LBRAA= age of the last best result achieved; NGRS= number of games in retirement season; DSL= discontinuation stage length; RA= retiring age; β = direct effects; R²= variance explained; CI-95%= confidence interval; p= level of significance

4.4 Discussion

The aim of this study was to propose a predictive model that links Portuguese Football players' athletic career stages and the retirement age according to the stages of the HAC-model (Initiation/Development, Mastery, and Discontinuation). Our focus was the identification of direct and indirect associations between the career indicators from the career's athletic layer, and the age of players' career termination which result from a multilayer process of phases, events, and choices.

Based on our intents, it was clear that the proposed model contributed to explain 40% of Portuguese football players' retirement age. CIs from all the stages of development revealed direct positive and negative effects with CIs from other stages, and indirect positive and negative effects were observed between CIs and retirement age, contributing to clarify career change events that support each stage of career and its transitions (Knights et al., 2016), and to promote the understanding of career retirement (Stambulova et al., 2020). Results from this study introduce a new approach with quantitative data to track players' career reinforcing previous results that used a qualitative approach to understand the athletic career of players (Battochio et al., 2016; Knights et al., 2019; Torregrossa et al., 2015). The use of quantitative data from players' athletic careers allows to monitor the process on a year-to-year basis from an individual or more generalized perspective. It is a new approach that could help players to evaluate and understand the path of their career (Monteiro et al., 2020), and support the definition of career goals and career planning and management from the Initiation to the Retirement stage. This is a new challenge for the future due to the huge number of players that in Portugal, and in other countries, rise and fall too fast, promoting issues of dropout with the consequent personal, social, and economic problems.

Initiation/Development stage

The CIs number of seasons as a youth player revealed a direct positive effect on the age at first registration as a senior player. Also, indirect effects were observed between CIs number of seasons as a youth player with CIs from the Discontinuation stage, discontinuation stage length, the number of games in the retirement season, and the retiring age. Such results reinforce that the process of athletic career and retirement starts during the Initiation and Development stages. The age for the start of practice, as well as the initial decisions of career paths by youth players, could constraint, in particular, the longevity of their careers (Wylleman et al., 2013).

In opposition to the results of Carapinheira et al. (2018), which revealed that the increase in the number of seasons as youth players tends to decrease the number of seasons as senior players and the age of retirement, we observed that the increase in the number of seasons as a youth player did not decrease the age of retirement. Results revealed that players with a higher number of seasons as youth players tend to increase the length of the Discontinuation stage, and consequently the age of retirement. Based on previous research, a longer Discontinuation stage could be linked to a higher probability of ending the career as a non-professional (Monteiro et al., 2020).

A higher number of seasons as a youth player in top3 clubs revealed an impact on Mastery stage in the age of the first registration as a senior player, number of seasons as a senior player in top 3 clubs and the total number of games as a senior player, but in opposition to our expectations only a small effect on the CI number of games in the retirement season from the Discontinuation stage. The impact of the results from the Initiation/Discontinuation stage on the path of players' athletic careers should be linked with issues related to early diversification or specialization. Previous studies have noted that specialization should only occur around the ages of 13-15 years (Coutinho et al., 2016). Indeed, according to the Development Model of Sport Participation (Côté et al., 2007), this stage is characterized by the commitment to a specific sport, diminishing the opportunities for playful activities with impact in their future career. Therefore, it is a timely opportunity to merge talent development and career transition approaches to a new process of continuous evaluation of an athlete's development pathway (Coutinho et al., 2016; Stambulova et al., 2020).

Mastery stage

Significant effects were observed between variables from Mastery and Discontinuation stages. The CI age of the first registration as a senior player revealed a direct positive effect on the number of games in the retirement season and on the discontinuation stage length. Also, indirect effects were observed between CI age at the first registration as a senior player and retiring age. Such results reinforce the importance of the junior-to-senior transition (JST) (Stambulova et al., 2020). The JST is a particular normative transition on the athletic career of players with increased demands. In fact, increased demands seems to be related to different modifications and transitions that generally occur in these age groups (e.g., academic, familiar, and professional context), requiring additional balance of the different spheres in which the athlete is involved (Stambulova et al., 2017). Furthermore, the age of the first appearance as a senior player seems to have an immediate influence on players' performances and an impact on the development of their future career. Hollings et al. (2014) considered that players should reveal more than a good performance in their first appearance as a senior. Particularly, youth players should reveal exemplary commitment with realistic goals, and reveal a strong self-efficacy, identity, and resilience to their athletic and other commitments in order to be successful in sport and in life. Our results reinforced this idea, revealing that players who become senior players later in time, have longer careers.

It is possible to assume that different retirement age variations could be achieved by different paths (Schroepf & Lames, 2018; Wendling & Sagas, 2020), thereby having different implications on the quality of retirement. In line with previous results (Monteiro et al., 2020), the increase in the number of seasons as a senior player seems to increase the discontinuation stage length with an increase in the retiring age. Based on that, it seems that the increase in the retiring age occurs as an attempt to extend the career regardless of the level. The increase in the age of the last best result achieved seems to increase the number of games in the retirement season and decrease the discontinuation stage length with a decrease in the retiring age. This particular path could positively impact players' transition due to feelings of achievement they mostly feel by

maintaining a high level of practice during most of their career (Demulier et al., 2013). However, it is not a linear process and it depends on the existence of the individual resources (Stambulova et al., 2009) and the definition of a pre-retirement planning (Torregrossa et al., 2015). Also, in conclusion, the integration of information from other HAC-model layers (Wylleman, 2019), as well as the development of a qualitative approach to compare the quality of retirement of players of different ages, different levels of retirement or with different individual resources should be considered to contemplate a more holistic perspective of the problem and to better predict the process of retirement (Cecić-Erpič et al., 2004; Torregrossa et al., 2004).

Discontinuation stage

The results of the Discontinuation stage revealed a direct positive effect between the discontinuation stage length and the retiring age. Thus, as previously mentioned, the relationship between an increase in the discontinuation stage length associated with an increase in the retiring age could be related to a decrease on the players' levels of practice over the years (Monteiro et al., 2020). Therefore, the increase in the Discontinuation stage associated with the increase of the retiring age seems to indicate an attempt of players to extend their career and maintain their athletic identity. That is, players tend to decrease their level of practice from a professional to a non-professional practice year after year in order to maintain their status of football players and delay the inevitable transition to a life after sport (Cecić-Erpič et al., 2004; Dimoula et al., 2013; Ekengren et al., 2018). Such time of refusal to end the career and the maintenance of a sports career at lower levels of practice was not used to plan and prepare for retirement, and therefore potentially negative social and economic consequences could occur (Holding et al., 2020; Knights et al., 2019; Martin et al., 2014). Even without results from other HAC-model layers (Wylleman, 2019) and about the quality of retirement, the analysis of the relationship between CIs from Mastery to Discontinuation stages allows us to combine the levels of performance (number of games as a senior player) with the players' levels of achievement (number of seasons as a senior player in top3 and age of the last best result achieved) and number of games in the retirement season and discontinuation stage length, to infer about the motivation and autonomy to retire with consequent implications on the quality of retirement (Holding et al., 2020). It will be a valuable information for managers and players to prospectively manage and better understand the implications of each career decision. Indeed, the increase in the level of consciousness about athletic career and retirement is of particular interest to promote career planning and for better quality in career retirement (Martin et al., 2014). Further research is required using qualitative and quantitative approaches to evaluate the implications of such results for the athletes' future lives (Stambulova et al., 2020).

The current research presents some limitations. First, the database used only considered athletic career paths of Portuguese players. Second, although the Holistic Athletic Career Model emphasized a holistic view of athletes' career in a multilayer process, as previously mentioned, it was the first attempt to explore new variables from the athletic career life cycle that could be considered to complement previous holistic approaches. This is quite a complex phenomenon

(Stambulova et al., 2020) that requires further research, particularly to identify the profiles of players at different levels of performance and the particular changes in each stage of development that constraint their career path (Battochio et al., 2016; Stambulova & Wylleman, 2019). Also, it was not possible to identify a preferable path of career and further research should identify players' profiles of career to better understand the implications of some career decisions in the career lifespan of players and retirement. At the end, a qualitative clarification about some of the considered CIs and their implications for the development of athletes' career paths should be considered for the future.

Besides of the limitations, as implications, the results of athletes' career paths and the relevant CIs identified should be used to improve players' career management and to develop further support programs that help players to better identify the stage of their career in relation to the termination process. The evaluation of each moment of their career through the evolution of each of the CIs identified could help coaches, managers, and of course the players to identify the actual moment in the life cycle of their athletic career and prospectively plan and prepare, in a more conscious way, each normative transition and in particular the retirement (Knights et al., 2019; Monteiro et al., 2020). The longitudinal perspective of the life cycle of athletes' career and its tendency of evolution based on CIs clearly could provide a more accurate and timely management of decisions related with the player trade, the contracts for the future or even the start of a dual career in order to better support the quality of career retirement.

5. Career Planning in elite Football: The mediating role of Self-efficacy, Career Goals and Athletic Identity

Monteiro, R., Monteiro, D., Torregrossa, M., & Travassos, B. (2021). Career Planning in Elite Soccer: The Mediating Role of Self-Efficacy, Career Goals, and Athletic Identity. *Frontiers in Psychology*, 12, 1-7

5.1 Introduction

Understanding players' career through the umbrella of the Holistic Athletic Career Model (Wylleman, 2019), underlines an holistic lifespan and "beginning-to-end" approach of the athlete's career development, describing career pathways and predicting normative transitions between adjacent stages in a multilayer process. The predictability of normative transitions, such as career retirement, creates an opportunity to prepare athletes to cope with them in advance (Stambulova et al., 2009). In fact, players' career is a process that should be prospectively managed to balance individual resources and barriers to prepare a smooth retirement and the life after sport (Alfermann & Stambulova, 2007; Demulier et al., 2013). In line with the social cognitive career theory (Lent & Brown, 2013), a positive relationship between self-efficacy, career goals and career planning seems to be key individual resources to such process (Demulier et al., 2013).

For instance, self-efficacy of athletes has been one of most important internal factors reported to explain successful career transitions (Wendling & Sagas, 2020). Self-efficacy could be defined as an individual's belief or ability to perform a specific task or behaviour to bring forth a desired outcome (Bandura, 2004). According to Lent and Brown (2013) self-efficacy in career transitions refers to the ability to manage specific tasks necessary with the preparation of such transitions, adjustments or changes. That is, the tasks related with career planning and management. In its turn, influenced by self-efficacy levels, career goals are defined as the intentions of athletes to be engaged with a certain task to achieve a specific outcome. Thus, career goals influenced by self-efficacy levels, contribute for a better definition of career objectives and the consequent steps or planning to achieve them. More precisely, career goals refer to the definition of the intended set of professional, life and after sport life achievements and the subsequent plans to achieve them and to face the expected problems during the process (Creed et al., 2013; Demulier et al., 2013). When objectives are clearly identified, career plans are made to pursue those previously identified objectives, triggering career achievements, and facilitating transitions. Career planning is defined as the definition of the actions or behaviours needed for career development. This kind of tasks, specific to career management (Rogers et al., 2008), seems to be a crucial aspect in the context of sport career termination. Individuals with high self-efficacy tend to better define career goals and plan their career (Lent & Brown, 2013). In these regards, it is reasonable to assume that self-efficacy and goals definition are proximal antecedents of career planning (Demulier et al., 2013). Besides the theoretical point of view among the variables, several empirical studies have been shown the associations among self-efficacy, career goals and career planning (e.g., Wendling & Sagas, 2020), which reinforces the importance of these variables in career transitions.

Previous research also pointed that individual differences and the level of consciousness (Rogers et al., 2008) about career transitions and particularly the retirement has implications to the level of career planning and consequently to the retirement. In line with that, the level of athletic identity is another important internal factor that could contribute to explain career planning through variations in the consciousness about career development and retirement (Martin et al., 2014). High levels of athletic identity may lead to an overinvolvement and commitment in sports practice, with reduction of attention to other social and career aspects, consequently decreasing

the consciousness about career management and development (Cecić-Erpič et al., 2004). Variations in emotional stability associated with career choice, humour disorders, substance abuse, unrealistic expectations regarding a sports related career and a lack of preparation for life and work outside of the sports world were also consequences related with high levels of athletic identity (Brown et al., 2000; Lally & Kerr, 2005; Stambulova & Ryba, 2014). In fact, previous research with Olympic athletes revealed that athletes with strong athletic identity, tend to not plan career retirement with consequences for life after sports (Torregrosa et al., 2015). The intensity of athletic identity varies in association with past relationship to sports and current athletic experiences, as well as the athlete's personal experiences with athletic failures and successes (Horton & Mack, 2000). However, research also revealed that athletes with higher athletic identity tend to revel higher levels of self-efficacy, particularly in relation to future career development related with the sport (Cabrita et al., 2014).

Despite of previous research in the context of sport revealed that career planning is influenced by the levels of self-efficacy, athletic identity, career goals, consciousness, competence or even or even some personality traits (Cabrita et al., 2014; Demulier et al., 2013; Wendling & Sagas, 2020), to best of our knowledge any study analysed the role of self-efficacy, career goals and athletic identity on career planning.

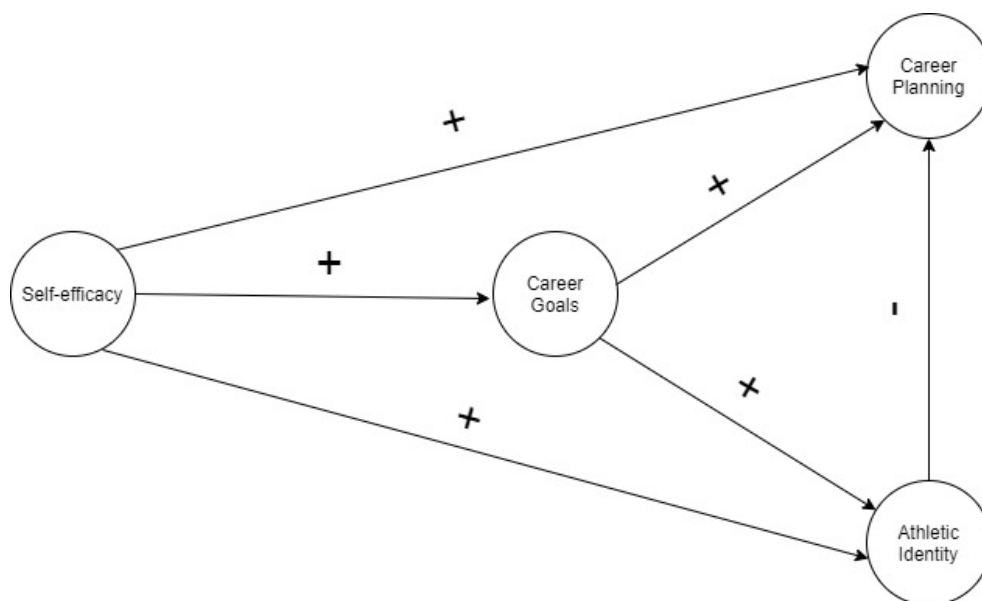


Figure 3. Hypothesized model to examine the role of self-efficacy, career goals and athletic identity on career planning of elite football players.

Based on previous research the present study proposed a model to examine the role of self-efficacy, career goals and athletic identity on career planning of professional football players (see Figure 1). It is hypothesized that: (a): self-efficacy positively predicted career goals, career planning and athletic identity; (b): career goals positively predicted career planning and athletic identity and (c): due to narrow focus in sports practice, and despite the positive relationship with self-efficacy and career goals, it was expected that athletic-identity negatively predicted career planning.

5.2 Method

5.2.1 Participants

A total of 281 active professional Portuguese football players (all male) aged between 18-39 years ($M = 26.23$; $SD = 4.96$), with a mean of 18.85 ± 2.32 years of practice, from several First and Second professional league clubs in Portugal were recruited to participate in this study.

5.2.2 Instruments

The instruments (Self-Efficacy-Short Form Scale; Career Goal Setting Scale and Career Planning Scale) previously not validated in Portuguese were translated to Portuguese and back-translated to the original scale (Beaton et al., 2000). In addition, the factor structure of each scale was examined before testing the hypothesized model.

Self-Efficacy

The self-efficacy-short form scale (Betz et al., 1996) was used to measure the athletes' self-efficacy. This scale is comprised of 12-items grouped into one-factor (e.g., "*Select career options that best match your interests, values, skills, personality, and lifestyle*"), which are preceded by the sentence: "*How confident are you about*". Athletes responded to each item using a 5-point likert scale varied from 1 ("*No confidence*") to 5 ("*Total confidence*"). A confirmatory factor analysis of this scale provided an acceptable fit to the data: ($\chi^2 = 354.92$; $DF = 54$; $SRMR = .021$; $B-Sp = .032$; $RMSEA = .076$ [$90\%CI = .019, .143$]; $TLI = .969$; $CFI = .990$).

Career Goals

Career Goal Setting scale (Wendling & Sagas, 2020) was used to assess the athletes' career goals. This scale is composed of 5-items grouped into one factor (e.g., "*I have a clear set of goals for my career after sport*"), preceded by the stem: "*About my career goals...*". Athletes responded to each item using a 7-point likert scale, varied from 1 ("*totally disagree*") to 7 ("*totally agree*"). The confirmatory factor analysis exhibited the following fit: ($\chi^2 = 91.30$; $DF = 5$; $SRMR = .025$; $B-Sp = .019$; $RMSEA = .070$ [$90\%CI = .052, .088$]; $TLI = .958$; $CFI = .986$).

Career Planning

The career planning scale (Wendling & Sagas, 2020), was used to measure athletes' career planning after sport. This scale is composed of eight items, grouped into one factor (e.g., "*I have a good understanding of the steps I need to take to reach my career goals*"), preceded the stem: "*About my career planning...*". Athletes responded to each item using a 7-point likert scale, which fluctuates from 1 ("*totally disagree*") to 7 ("*totally agree*"). The item 1, 6 and 7 are reverse-coded. The confirmatory factor analysis revealed an adequate fit to the data: ($\chi^2 = 72.46$; $DF = 20$; $SRMR = .018$; $B-Sp = .218$; $RMSEA = .054$ [$90\%CI = .001, .126$]; $TLI = .987$; $CFI = .996$).

Athletic Identity

The Portuguese version of Athletic Identity (AIMS-plus Portuguese version) (Cabrita et al., 2014) was used to assess the athletes' identity in line with the original AIMS (Brewer & Cornelius, 2001)

and AIMS-plus (Cieslak et al., 2005). This questionnaire is comprised of 15-items distributed throughout five subscales: social identity, exclusivity, self-identity, positive affectivity, and negative affectivity. The questionnaire contains a sliding-scale answer format, oscillating from 0 (totally disagree) to 10 (totally agree), thus, partial scores may be calculated for each dimension along with a total AI score. Higher scores indicate a greater level of identification with the athlete's role. The confirmatory factor analysis revealed an adequate fit to the data: ($\chi^2= 704.99$; $DF= 90$; $SRMR=.033$; $B-Sp= .118$; $RMSEA=.046$ [$90\%CI=.001, .092$]; $TLI=.931$; $CFI=.943$).

5.2.3 Data Collection

Written informed consent was obtained from football players. Approval for this study was granted by the Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD), institution that is registered in the Portuguese National Science Foundation (FCT) under the reference UID04045/2020. All procedures were in accordance with the 2013 Helsinki declaration and its later amendments. The data was collected during the period of March to September 2020. Each athlete received an e-mail with a link to access the questionnaires using the Survey Monkey platform. Participants filled the multi-section survey in approximately 15 minutes.

5.2.4 Data Analysis

Descriptive statistics were calculated for all variables under analysis. Following Kline recommendations, a two-step approach via maximum likelihood estimator method (ml) was employed in Amos 23.0: (a) Confirmatory Factor Analysis (CFA) was conducted to test the psychometric properties of measurement model. Convergent validity, through average variance extracted (AVE) was calculated and scores $\geq .50$ was considered as adequate (Hair et al., 2019). Discriminant validity was verified when average variance factor of each factor were less than or equal to the square correlations across each construct underlying measurement model (Hair et al., 2019). Finally, composite reliability of each construct was calculated via Raykov et al. (2016) formula and scores $\geq .70$ were considered as acceptable; (b) Structural equation modeling (SEM) to test the model fit was performed. In addition, standardized direct and indirect effects on the outcome's variables were analyzed. Therefore, Bootstrap resampling (1000 samples), via bias corrected 95% confidence intervals (CI) was used to assess the significance of the direct and indirect effects. The magnitude of effects was evaluated through Cohen (2013) suggestions: trivial (0–.19), small (.20–.49), medium (.50–.79) and large (.80 and greater). The traditional incremental and absolute goodness-of-fit indexes: Comparative Fit Index (CFI); Tucker-Lewis Index (TLI); Standardized Root Mean Square Residual and Root Mean Square Error of Approximation (RMSEA) and its respective confidence interval (90%) were employed to test the model fit for both CFA and SEM and the cut-off values suggested by Hair et al. (2019) were assumed: CFI and TLI $\geq .90$; SRMR and RMSEA $\leq .08$.

5.3 Results

A prior analysis showed no missing values, neither outliers' univariate nor multivariate emerged. The values of Skewness and Kurtosis (between -2 to +2 and -7 to +7, respectively) revealed no deviations from univariate normality. However, Mardia coefficient for multivariate kurtosis exceed the expect value (>.5). Thus, bootstrap bollen-stine (2000 samples) was employed for subsequent analysis. Possible collinearity diagnosis was tested by variance inflation factor (VIF), and tolerance test assuming values < 10 for VIF and < .01 for tolerance test. Consequently, the results displayed that both in VIF and tolerance tests scores were below 10 and above .1 respectively, guaranteeing the proper conditions to test the regression model.

5.3.1 Descriptive Statistics

Descriptive results revealed high values (above midpoint) for all studied variables and bivariate correlations exhibited a significant pattern across all variables. The highest correlation value was observed between career goals and career planning ($r=.87$), while lowest values was observed between self-efficacy and athletic-identity ($r=-.29$) (Table 1).

5.3.2 Measurement Model

The analysis of measurement model included self-efficacy, career goals, career planning and athletic identity. Results shown that the measurement model fit to the data ($\chi^2= 1927.79$ (734); SRMR=.069; B-S $p<.001$; RMSEA=.059 [90%CI=.047, .070]; TLI=.922; CFI=.935). Additionally, measurement model revealed no problems of convergent (all factors presented score above .50 in AVE). In terms of discriminant validity, a slight problem was identified involving the career goals and career planning factors, due to the square correlation between them are above to AVE of each factor. The remains factors did not present discriminant validity problems. In addition, all of constructs present an adjusted value of composite reliability since all of them are $\geq .70$. Therefore, the psychometric properties of measurement model were guarantee (Table 9).

Table 9. Descriptive statistics, bivariate correlations, average variance extracted and composite reliability coefficients

| Variables | Range | M | SD | 1 | 2 | 3 | 4 | AVE | CR |
|----------------------|-------|------|-----|--------|-------|-------|---|-----|-----|
| 1. Self-efficacy | 1-5 | 4.32 | .64 | | | | | .57 | .88 |
| 2. Career goals | 1-7 | 5.53 | .88 | .34** | | | | .50 | .74 |
| 3. Career planning | 1-7 | 5.24 | .71 | .27** | .87** | | | .50 | .79 |
| 4. Athletic identity | 1-10 | 8.6 | .94 | -.29** | .33* | .42** | | .54 | .82 |

Note. M = Mean; SD = Standard Deviation; AVE= average variance extracted; CR= composite reliability; * $p<0.05$; ** $p<0.01$

5.3.3 Structural model

The results from structural model displayed a good fit to the data ($\chi^2= 1927.79$ (734); SRMR=.049; B-S $p= .<.001$; RMSEA=.042 [90%CI=.032, .052]; TLI=.959; CFI=.965).

Overall significant associations were observed among variables under analysis, specifically: (a) self-efficacy displayed a positive and significant effect on career goals, athletic identity, and career planning; (b) career goals displayed positive and significant effect with career planning and athletic identity; and (c) athletic identity displayed a negative and significant effect with career planning.

Self-efficacy displayed indirect positive and significant effect with career planning and athletic identity via career goals. Career goals also displayed a positive and significant effect with career planning, via athletic identity. The observed effects varied between trivial to large (Table 10).

Table 10. Direct and indirect regression paths

| Regression Path | Direct | | | Regression Path | Indirect | | |
|-----------------|---------|----------------|----------|-----------------|----------|--------------|----------|
| | β | CI95% | <i>p</i> | | β | CI95% | <i>p</i> |
| SE → CG | .24 | [.132; .388] | .001 | SE → CP | .16 | [.091; .188] | .002 |
| SE → AI | .22 | [.127; .334] | .001 | SE → AI | .35 | [.242; .440] | .001 |
| SE → CP | .41 | [.263; .563] | .001 | CG → CP | .18 | [.063; .347] | .001 |
| CG → CP | .83 | [.626; .881] | <.001 | - | - | - | - |
| CG → AI | .28 | [.162; .425] | .001 | - | - | - | - |
| AI → CP | -.32 | [-.468; -.203] | .002 | - | - | - | - |

Note. SE= self-efficacy; CG= career-goals; CP= career planning; AI= athletic identity; β = standardized coefficient; CI95%= Confidence Interval at 95%; *p* = level of significance

5.4 Discussion

The aim of the present study was to test a model examining the role of self-efficacy, on career goals and athletic identity on career planning of elite football players. In line with previous research, it was a first attempt to integrate athletic identity with self-efficacy, and career goals to further explain the process of career planning. In general, the model revealed good fit to data, helping to reinforce the positive contribution of self-efficacy, and career goals and the negative contribution of athletic identity to career planning of professional football players.

More specifically, the results confirmed all the hypotheses, revealing that: (a) self-efficacy positively predicted career goals, career planning and athletic identity; (b) career goals positively predicted career planning and athletic identity; and (c) athletic-identity negatively predicted career planning. Thus, while self-efficacy and career goals acted as mediating facilitators (Creed et al., 2013; Demulier et al., 2013; Wendling & Sagas, 2020), the athletic identity played as a mediating barrier for career planning.

In this work, we aimed to look to the individual resources that positively or negatively constraint the process of career planning (Lent & Brown, 2013; Wendling & Sagas, 2020). Looking to each variable in analysis, the results revealed that football players with higher self-efficacy seems to better define career goals and directly and indirectly career planning. Players' self-efficacy seems to contribute to a better definition of objectives of career and consequently to clarify about their career plans for the future (Creed et al., 2013; Lent & Brown, 2013). Such results are in line with previous research that showed that the definition of players' career goals was positively related

with the quality of career retirement (Debois et al., 2015; Park et al., 2013). Furthermore, career planning seems to be influenced by the level of players' self-efficacy through the definition of career goals, and building plans, helping triggering players' confidence in career self-management and decision-making. In fact, as previously pointed by Monteiro et al. (2020) more than only the goals definition, the goals achievement demonstrated strong relation with the age of career retirement and also the level of retirement. However, the most important issue is not to achieve a high level of performance, but to maintain such level over the career. The feeling of self-achievement in these cases seems to be crucial to maintain high levels of self-efficacy and a better definition of career planning (Demulier et al., 2013; Torregrosa et al., 2015).

Looking to the relationship between self-efficacy, career goals and athletic identity according to our model, results revealed that players with high self-efficacy revealed better definition of career goals and directly and indirectly increased the level of athletic identity. Results were in line with previous research that revealed that players with a strong self-efficacy tend to reveal a strong sense of athletic identity (Lamont-Mills & Christensen, 2006). During athletic career, high levels of athletic identity contribute to football players maintain exclusively the focus on sports performance and on management of professional activities (e.g., training seasons, game schedule, request rest, pre-game stages) (Torregrosa et al., 2015). That is, with the increase in self-efficacy and goals achievement, football players become more confident and tend to develop their individual thinks and feels around the sport world (Creed et al., 2013; Demulier et al., 2013; Wendling & Sagas, 2020). Also, the level of athletic identity seems to be positively associated with athletic performance, a desirable quality encouraged by coaches and clubs' structure (Martin et al., 2014). However, the major issue is that, as previously demonstrated, at the moment of career retirement the high levels of athletic identity tend to negatively impact the process and quality of retirement (Park et al., 2013).

In line with that, and according to our expectation, the results highlighted a negative relationship between athletic identity and career planning. As observed with Olympic athletes (Torregrosa et al., 2015), football players (Carapinha, Torregrossa, et al., 2019), handball players (Ekengren et al., 2018) and student-athletes (Lally & Kerr, 2005; Wendling & Sagas, 2020) a strong athletic identity is related with a lack of career planning. The behavior of elite athletes, and particularly the elite football players, to delay "undressing the sports sweater" could be related to the need to maintain the financial support and social status (Demulier et al., 2013; Martin et al., 2014), and to the lack of self-awareness and planning about the advantage to prepare the other career when the sports ends. Moreover, Cabrita et al. (2014) showed that athletic identity could constraint the chooses or opportunities for post sport career, being this a primary determining factor in whether an athlete chooses a sport-related career.

According to our model, the career goals could act as a mediator variable between self efficacy, athletic identity, and career planning. That is, the definition and management of objective and achievable career goals for the development but also to the end of career could ensure a more balanced and planed career development and retirement. Particularly, the identification and link between career goals and life goals could be assumed of particular interest to decrease the level of athletic identity, promoting the process of career planning and career retirement (Stambulova et

al., 2020; Torregrosa et al., 2015). Despite the lack of time and energy that athletes need to engage in non-sports-related activities (Ekengren et al., 2018; López de Subijana et al., 2015; Stambulova & Wylleman, 2019), it seems a key issue to decrease the level of athletic identity, and consequently allows a better career planning process. Recently, the International Society of Sport Psychology assumed that to improve the athletic identity foreclosure in athletes, there is a need to create new possibilities for athletes self-exploration of multidimensional personal identities and development of a dual career (Stambulova et al., 2020). Thus, based on our results, and in line with the Holistic Athletic Career Model (Wylleman et al., 2004), it is suggested that the career management of elite athletes should start with the definition of career goals through the definition of some key performance indicators that help football players and managers to identify goals achievement (Monteiro et al., 2020) followed by the definition of parallel life goals and exploration of a dual career perspective in order to decrease athletic identity and improves the career planning (Torregrosa et al., 2015).

Summarizing, the proposal model demonstrated the mediating positive influence that career goals have on relationship between self-efficacy career planning, and athletic identity. These findings reinforce the important role of self-efficacy on this process and reinforce findings about decision making process on sport career retirement (Park et al., 2013). Although the present study contributes to the understanding the role of self-efficacy, career goals and career planning as well as athletic identity in active football players, it has some limitations. All the variables were assessed at the same time so we can only address the associations among the variables without determining causality. In this sense, longitudinal or experimental studies are necessary to further examine the effects of the studied variables. In addition, future studies should try to examine the respective effects of each studied variable and possibly to examine whether these effects are invariant for football players of different gender, different ages. It is possible that studied variables may play different roles for male or female players, or that their effects may fluctuate according to variations in their educational, social, or financial status. Finally, in the present study we included active football players and future studies should also explore other sports (e.g., futsal) and assess the football players perspective after their career retirement.

Despite positive interactions with the self-efficacy and career goals, athletic identity revealed a negative relationship with career planning. Thus, managers, coaches, and sport psychologists should start since the beginning of football players' careers to encourage the definition of realistic career and life goals as well as the promotion of a dual career project that allows to decrease the level of players' athletic identity. The definition of career goals and the integration of life goals in the process of career management seems to be crucial for career planning and consequently for the process of retirement.

6. General Discussion

This thesis aimed to identify the KCI in the various stages of athletic development and their influence as predictors of the competitive level of retirement and longevity of the athlete's career in a way to assist athletes with career planning. Also, to better understand the individual characteristics that define the career planning process, the relationship between athletic identity with self-efficacy and career goals was analyzed. For that purpose, three studies were carried out with specific goals: (1) describe and identify the weight of the KCI from the mastery stage on the competitive level of retirement (professional vs. non-professional) of Portuguese football players; (2) propose a predictive model that links players' athletic development and retirement age according to the HAC-model (Initiation/Development, Mastery, Discontinuation) of Portuguese football players; (3) propose a model to examine the role of self-efficacy, career goals and athletic identity on career planning of professional football players.

In general, we identified some of the KCI that characterize the career path of football players' career and also its relationship with competitive level of retirement and longevity of the athlete's career. Moreover, it was also reinforced that the athletic identity is one of the key aspects that negatively constraints career planning, even considering the positive effect of self-efficacy and career goals.

How to predict the level of retirement?

Results of the first study revealed that 20%, 69.4%, and 74.1% of the players who enter in mastery stage as an elite, first pro and second pro-competitive level, respectively, finish their career as non-professional players. Additionally, the transition from junior to senior is not only a critical moment to avoid dropout (Stambulova et al., 2009), but is also decisive for the development of the players' career. Hollings et al. (2014) pointed out that the initial success in the beginning of career as senior players is one of the reasons for a successful career in sport. In opposition to the frequent strategies adopted by football players, all the decisions regarding the first club as senior players, the existence of a dual career, vocational future or even the commitment to engage in non-sport-related activities as professional should be accounted for career planning.

The age of the last best result achieved over the mastery stage also influences the competitive level of retirement. Accordingly, the later the best result was achieved in mastery stage, the greater the chances to end the career as a professional player. Based on previous research, it was observed that in the analysis of the lifespan of French elite male athletes (Debois et al., 2015) the retirement was smoothed according to the athletes' achievements during their sports career. Feeling of self-achievements and career goals were revealed as a strong predictor of the quality of retirement of elite athletes (Demulier et al., 2013). However, further research is required in order to link the level of achievements with the competitive level and the quality of retirement.

Stambulova and Wylleman (2014) referred that career planning interventions are fundamental to assist athletes to increase self-awareness, to define realistic career goals and prepare the

forthcoming career steps and transitions. Accordingly, the need to better understand the career planning process seems to us be extremely important.

At the end of this topic, the analysis of the total number of games played in the mastery stage revealed that for each additional game played, an increase in the chances to finish a career as a professional player was observed. Beyond that, an important issue to reach and maintain the career in a high level is the participation in a high number of games throughout the seasons. Therefore, the evolution of the number of games played each season or the deselection trend could help players and managers to understand the evolution of their athletic development with implications for the preparation of the end of the sports career (Martin et al., 2014).

How to predict retirement?

In line with previous assumptions, deselection is a clear KCI for retirement. Indeed, deselection was one of the motives most reported by Portuguese football players for involuntary retirement (Carapinha, Torregrossa, Mendes, Carvalho & Travassos, 2019) with the associated difficulties in adaptation to post sport career, including negative emotional reactions (Park et al., 2013; Stambulova et al., 2009). Football players that retired by deselection were faced with the difficult decision to terminate their sporting careers pre-maturely and to start another professional career (Moesch, 2012). Higher bench time athletes were the words used to characterize these athletes (Butt & Molnar, 2009). Thus, the idea of looking to the evolution of the number of games played each season and/or to a moment in which deselection is noted possibly meaning that the end of career is near, helping players to transform possible uncontrollable variables and decisions in more controlled and conscious ones (Demulier et al., 2013).

How to predict the age of retirement?

Based on the HAC-model, that considers sports career as a process over stages (Wylleman et al., 2004), results of second the study revealed that the proposed model contributed to explain 40% of Portuguese football players' retiring age. Direct effects between KCIs of different stages and indirect positive and negative effects between KCIs and retirement age were observed. From all the results between stages, an indirect effect was observed between KCI number of seasons as a youth player with KCIs from the Discontinuation stage, discontinuation stage length, the number of games in the retirement season, and the retiring age. Such results reinforce that the process of players' development and retirement starts during the initiation and development stages. The age for the start of practice, as well as the initial decisions of career paths by youth players, could constraint, in particular, the longevity of their careers (Wylleman et al., 2013). In opposition to the results of Carapinha et al. (2018), which revealed that the increase in the number of seasons as youth players tend to decrease the number of seasons as senior players and the age of retirement, it was observed that the increase in the number of seasons as a youth player did not decrease the age of retirement. Players with a higher number of seasons as youth players tend to increase the length of the Discontinuation stage, and consequently the retiring age. Based on previous research, a longer Discontinuation stage could be linked to a higher probability of ending the career at a non-professional level (Monteiro et al., 2020). Further research is required on the

relationship between early specialization, retirement, and quality of retirement to understand the impact of the early decisions of players on their entire career and retirement process.

In line with previous results, the KCI age of the first registration as a senior player (Mastery stage) revealed a direct positive effect on the number of games in the retirement season (Discontinuation), and an indirect effect on retiring age. Such results reinforce the importance of the junior-to-senior transition (JST) (Stambulova et al., 2020) not only for the immediate players' performance but also for their entire career and retirement. In fact, more than the required balance in different spheres of personal, academic, social life that the players need to cope with at the moment of transition (Stambulova et al., 2017), it is required that players reveal a strong commitment, identity and resilience at the moment of their first appearance (Hollings et al., 2014).

Our results reinforced this idea, revealing that players who become senior players later in time, have longer careers. However, a positive effect was also observed on the variable discontinuation stage length. The higher the age of the first registration as a senior player, the longer the Discontinuation stage, and according to previous research, the higher the probability of ending the career as a non-professional player (Monteiro et al., 2020). Again, further research is required to understand the relationship between age of first registration, discontinuation stage length and age of retirement for players of different levels of performance. It is possible to assume that different retirement age variations could be achieved by different paths (Schroepf & Lames, 2018; Wendling & Sagas, 2020), thereby having different implications on the quality of retirement. Thus, the KCI first registration as a senior player could be considered to further understand age of retirement taking in consideration the analysis of the discontinuation stage length in relation to the level of practice of players considered in the first study (Monteiro et al., 2020).

According with our previous assumption, the increase in the age of the last best result achieved seems to increase the number of games in the retirement season and decrease the discontinuation stage length with a decrease in the retiring age. This particular path could positively impact players' transition due to feelings of achievement they mostly feel by maintaining a high level of practice during most of their career (Demulier et al., 2013). However, it is not a linear process and it depends on the existence of the individual resources (Stambulova, Alfermann, Statler & Côté, 2009) and the definition of a pre-retirement planning (Torregrosa et al., 2015).

Otherwise, the increase in the discontinuation stage length associated with an increase in the retiring age could be related to a decrease on the players' levels of practice over the years (Monteiro et al., 2020). Therefore, the increase in the discontinuation stage associated with an increase in the retiring age seems to indicate an attempt from players to extend their career and maintain their athletic identity. That is, players tend to decrease their level of practice from a professional to a non-professional practice year after year in order to maintain their status of football players and delay the inevitable transition to a life after sport (Cecić-Erpič et al., 2004; Dimoula et al., 2013; Ekengren et al., 2018). Such time of refusal to end the career and the maintenance of a sports career at lower levels of practice was not used to plan and prepare for

retirement, and therefore potentially negative social and economic consequences could occur (Holding et al., 2020; Martin et al., 2014).

Further research should integrate in this quantitative analysis a qualitative approach that considers the individual resources (Stambulova, Alfermann, Statler & Côté, 2009), the athletic identity or even the identification of career goals or a pre-retirement planning (Torregrosa et al., 2015) to better understand the different career paths over the HAC-model layers (Wylleman, 2019), and its implications for the quality of retirement (Cecić-Erpič et al., 2004; Torregrosa et al., 2004). This is quite a complex phenomenon (Stambulova et al., 2020) that requires further research, particularly to identify the profiles of players at different levels of performance and the particular changes in each stage of development that constraint their career path (Battochio et al., 2016; Stambulova & Wylleman, 2019).

Thus, in line with the revealed models it was possible to identify some the KCIs from different stages of career development that help to explain the level of retirement, the retirement itself or even the age of retirement. Understanding the career as a process that could be planned and managed in opposition to a sum of positive or negative events that could occur due to external factors, allow the players to perceive the process of retirement as much less difficult (Torregrosa et al., 2004; Wylleman et al., 2013). In this regard, the managers and players need to know how to look to the tendencies of career development not only during on the mastery stage but in all stages to manage the career development, prepare and anticipate the career termination to prepare for the new career out of sports. We believe that the KCIs identified will be a valuable information for managers and players to prospectively manage and better understand the implications of each career decision. Indeed, the increase in the level of consciousness about career development and retirement is of particular interest to promote career planning and for better quality in career retirement (Martin et al., 2014).

How do individual resources impact in career planning?

Despite of previous results about the career path of football players, and the level of prediction of the models and the KCI measured, as previously mentioned, the research in the context of sport revealed that career planning is fundamental for the process of retirement and its consequent quality (Park et al., 2013). In line with the social cognitive career theory (Lent & Brown, 2013), career planning is influenced by the levels of self-efficacy, athletic identity, career goals, or even other personality traits (Cabrita et al., 2014; Demulier et al., 2013; Wendling & Sagas, 2020). However, as previously pointed, high levels of athletic identity could also be related with an attempt from players to extend their career year after year without any plan to prepare retirement, only with the goal to maintain the social status and avoid economic consequences (Holding et al., 2020; Martin et al., 2014). In fact, high levels of athletic identity promote higher commitment in sports practice, with reduction of attention to career aspects, consequently decreasing the consciousness about career management and development (Cecić-Erpič, Wylleman, & Zupančič, 2004).

Thus, in the third study, we analysed the relationship between self-efficacy, career goals and athletic identity on career planning of elite football players. It was a first attempt to integrate athletic identity into a model to examine the role of these key individuals' resources on career planning of actual professional football players. In line with our expectations, results confirmed all the hypotheses raised, revealing that: (a) directly and indirectly self-efficacy positively predicted career goals, career planning and athletic identity; (b) career goals positively predicted career planning and athletic identity; and (c) athletic-identity negatively predicted career planning.

According to our proposed model and in line with previous research (Creed et al., 2013; Lent & Brown, 2013), career planning seems to be influenced by the level of players' self-efficacy through the definition of career goals, and making plans, helping triggering players' confidence in career self-management and decision-making. In fact, as previously pointed by Monteiro et al. (2020) more than just goal definition, goal achievement demonstrated a strong relation with the retiring age and also the level of retirement. However, the most important issue is not to achieve a high level of performance, but to maintain such level over the career. According to the first study (Monteiro et al., 2020), the later the age of the last best result achieved in mastery stage, the greater the chances to end the career as professional player. The feeling of self-achievement in these cases seems to be crucial to maintain high levels of self-efficacy and a better definition of career planning (Demulier et al., 2013; Torregrosa et al., 2015).

Another major contribution of this work was verified on relationship between self-efficacy, career goals and career planning via athletic identity, which results showed that players with high self-efficacy revealed better definition of career goals and directly and indirectly increased the level of athletic identity. Although the level of athletic identity seems to be positively related with athletic performance, at the moment of career retirement, the high levels of athletic identity tend to negatively impact the process and quality of retirement (Park et al., 2013). In line with that, and according to our expectation, the results highlighted a negative relationship between athletic identity and career planning. As observed with Olympic athletes (Torregrosa et al., 2015), football players (Carapinha, Torregrossa, et al., 2019), handball players (Ekengren et al., 2018), and student-athletes (Lally & Kerr, 2005; Wendling & Sagas, 2020) a strong athletic identity is related with a lack of career planning. The behavior of elite athletes, and particularly the elite football players, to delay "undressing the sports sweater" could be related to the need to maintain the financial support and social status (Demulier et al., 2013; Martin et al., 2014), and to the lack of self-awareness and planning about the advantage to prepare for another career when the sport ends. Moreover, Cabrita et al. (2014) showed that athletic identity could constraint the choices or opportunities for post sport career, this being a primary determining factor in whether an athlete chooses a sport-related career.

Summarizing, while self-efficacy and career goals acted as mediating facilitators (Creed et al., 2013; Demulier et al., 2013; Wendling & Sagas, 2020), the athletic identity played as a mediating barrier for career planning. According to the proposed model it seems that the definition and management of career goals could be a key to decrease the level of athletic identity and consequently ensure a more balanced career development and retirement (Stambulova et al.,

2020; Torregrosa et al., 2015). Thus, it is suggested that the career management of elite athletes should start with the definition of career goals through the definition of some KCI that help football players and managers to identify goal achievement (Monteiro et al., 2020) followed by the definition of parallel life goals and exploration of a dual career perspective that decreases athletic identity and improves career planning (Torregrosa et al., 2015). The definition of career goals and the integration of life goals in the process of career management seems to be crucial for career planning and consequently for the process of retirement.

7. Final Conclusions

The main conclusions drawn from the three studies on current investigation were:

Following the last position of the International Society of Sport Psychology for career development and transitions of athletes (Stambulova et al., 2020), the main purpose of the current research was the identification of Key Career Indicators (KCI) that could be characterize changes over the athletic career development and its implications for the process of career development and retirement. Moreover, it was our intent to understand the influence of internal factors on the process of career development and retirement. The increase in the level of consciousness about career development and retirement is of particular interest to promote career planning, and a smooth and better quality in career retirement (Martin et al., 2014). Table 11 summarizes the main achievements of this thesis based on the KCI identified and measures and the implications for the career management of players.

Thus, our research demonstrated how key career indicators (KCI), in the various stages of the athletic development level, influence the competitive level of retirement and longevity of the athlete's career. Although the Holistic Athletic Career Model emphasized a holistic view of the athletes' career development in a multilayer process, it was the first research in sports career which used quantitative data from athletic development, allowing us to identify the most relevant KCIs to prospectively predict athletes' career paths and their age of retirement. Managers and players should use them for the future as predictors of sports career development, allowing to prepare the image of retirement (Carapinheira, Torregrossa, et al., 2019), and voluntary termination decisions. The KCI should be used to improve the consciousness of players and managers about career achievements, helping to prospectively prepare the moment of retirement (see Table 11).

Also, our findings reinforce the important role of the individuals' resources, such as self-efficacy and career goals for development of career planning. The opposite relationship was obtained between athletic identity and career planning (see Table 11). Thus, it is suggested that a balance on athletic identity, maintaining high levels of self-efficacy and career goals is required to improve the process of career planning and retirement. Managers, coaches, and sport psychologists should start from the beginning of the football players' careers to encourage the definition of realistic career and life goals as well as the promotion of a dual career projects that allow to decrease the level of the players' athletic identity.

In fact, at the end of this research project it was possible to reinforce that the development and particularly the retirement from an athletic career is not a random process based only upon luck. Here it was possible to identify some of the variables that characterize the athletic level of the HAC-model that could contribute for a better career management and planning. Also, the definition of career goals and the integration of life goals in the process of career management seems to be crucial for career planning and consequently for the process of retirement.

Table 11. Summary the final conclusions of the research

| Key Career Indicators (KCI) | Results | Implications | Further research |
|--|--|---|--|
| How to predict retirement? | | | |
| Total number of games played in the mastery stage | ↓ number of games played in the mastery stage or DESELECTION | ↑ probability of ending the career as a non-professional ↑ difficulty of retirement | Link the number of games played in the mastery stage, with the players' levels of achievement and the quality of retirement |
| How to predict the competitive level of retirement? | | | |
| 1 st senior competitive level | <p>Elite → 20% Non-Pro 1st → 69,4% Non-Pro 2nd → 74,1% Non-Pro</p> | <p>Decisions regarding the first club as senior player</p> <p>The existence of a dual career, vocational future for the definition of the players' career path</p> <p>Level of preparedness for the Junior to Senior transition</p> | Link the level of achievements with the quality and competitive level of retirement |
| Age of the last best result achieved | <p>↑ Age of the last best result achieved</p> <p>↑ number of games in retirement season</p> <p>↓ discontinuation stage length</p> <p>↓ retiring age</p> <p>↑ Level of retirement</p> | <p>↑ feeling of achievements / achieve and maintain a high level of practice</p> <p>Particular path / nonlinear process that depends on the individual resources and a pre-retirement planning</p> | <p>Link the individual resources and the career path</p> <p>Link the levels of athletic identity and the career path</p> |
| Total number of games played in the mastery stage | ↓ number of games played in the mastery stage | ↑ probability of ending the career as a non-professional ↑ difficulty of retirement | Link the evolved of players' levels of achievement with quality and competitive level of retirement |
| How to predict the age of retirement? | | | |
| Number of seasons as a youth player | <p>↑ Number of seasons as a youth player</p> <p>↑ discontinuation stage length</p> <p>↑ retiring age</p> | <p>Initial career decision has implications for the entire career - athletic career as a process "beginning-to-end"</p> <p>↑ probability of ending the career as a non-professional</p> <p>↑ difficulty of retirement</p> | Relationship between early specialization, retirement, and quality of retirement to understand the impact of the early decisions of players for their entire career and retirement process |
| Age of the first registration as a senior player | <p>↑ Age of the first registration as a senior player</p> <p>↑ discontinuation stage length</p> <p>↑ retiring age</p> <p>↑ longer careers</p> | <p>Decisions regarding the first club as senior player (Junior to Senior Transition)</p> <p>↑ probability of ending the career as a non-professional</p> <p>↑ difficulty of retirement</p> | Relationship between age of first registration, discontinuation stage length and age of retirement for players of different levels of performance |
| Discontinuation stage Length | <p>↑ discontinuation stage length</p> <p>↑ retiring age</p> <p>↑ longer careers</p> | <p>↑ probability of ending the career as a non-professional</p> <p>↑ difficulty of retirement</p> | Distinguish and identify the characteristics of the players with high and low discontinuation stage length |
| How individual resources impact in career planning? | | | |
| | SE → +CG → +AI → -CP | <p>Negative relationship between athletic identity and career planning</p> <p>Self-efficacy and Career goals acted as mediating facilitators for Career planning</p> <p>Athletic identity played as a mediating barrier for Career planning</p> | <p>Relationship between students and non-students' athletes</p> <p>Comparison between players of different levels of practice</p> |

8. References

- Agresta, M. C., Brandão, M. R. F., & Barros Neto, T. L. d. (2008). Physical and emotional causes and consequences of career termination in sports. *Revista Brasileira de Medicina do Esporte*, 14(6), 504-508. <https://doi.org/10.1590/S1517-86922008000600006>
- Alfermann, D., & Stambulova, N. (2007). Career transitions and career termination. In R. C. Tenenbaum & G. Eklund (Eds.), *Handbook of Sport Psychology, Third Edition* (pp. 712-733). Wiley. <https://doi.org/10.1002/9781118270011.ch32>
- Allen, S. V., & Hopkins, W. G. (2015). Age of peak competitive performance of elite athletes: a systematic review. *Sports Medicine*, 45(10), 1431-1441. <https://doi.org/10.1007/s40279-015-0354-3>
- Babic, V., Bjelic, G., & Bosnar, K. (2019). Life Well-Being and Reasons for Sports' Career Termination in Croatian Elite Athletes. *Sport Mont*, 17(3), 21-25. <https://doi.org/10.26773/smj.191008>
- Bailey, M. (2014). *What do footballers do when they retire?* <https://www.telegraph.co.uk/men/active/11028666/What-do-footballers-do-when-they-retire.html>
- Bandura, A. (2004). Health promotion by social cognitive means. *Health education & behavior*, 31(2), 143-164.
- Barreira, J. (2016). Age of Peak Performance of Elite Women's Soccer Players. *International Journal of Sports Science*, 6(3), 121-124. <https://doi.org/10.5923/j.sports.20160603.09>
- Battochio, R., Stambulova, N., & Schinke, R. (2016). Stages and demands in the careers of Canadian National Hockey League players. *Journal of sports sciences*, 34(3), 278-288. <https://doi.org/10.1080/02640414.2015.1048523>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186-3191.
- Betz, N. E., Klein, K. L., & Taylor, K. M. (1996). Evaluation of a short form of the career decision-making self-efficacy scale. *Journal of career assessment*, 4(1), 47-57.
- Brewer, B. W., & Cornelius, A. E. (2001). Norms and factorial invariance of the Athletic Identity Measurement Scale. *Academic athletic journal*, 15(2), 103-113.
- Brown, C., Glastetter-Fender, C., & Shelton, M. (2000). Psychosocial identity and career control in college student-athletes. *Journal of Vocational Behavior*, 56(1), 53-62.
- Brown, C. J., Webb, T. L., Robinson, M. A., & Cotgreave, R. (2018). Athletes' experiences of social support during their transition out of elite sport: An interpretive phenomenological analysis. *Psychology of Sport and Exercise*, 36, 71-80. <https://doi.org/10.1016/j.psychsport.2018.01.003>
- Butt, J., & Molnar, G. (2009). Involuntary career termination in sport: A case study of the process of structurally induced failure. *Sport in society*, 12(2), 240-257. <https://doi.org/10.1080/17430430802591027>
- Cabrita, T. M., Rosado, A. B., Leite, T. O., Serpa, S. O., & Sousa, P. M. (2014). The relationship between athletic identity and career decisions in athletes. *Journal of applied sport psychology*, 26(4), 471-481.
- Carapinha, A., Mendes, P., de Carvalho, P. G., & Travassos, B. (2019). Sports career termination in football players: systematic review. *Revista iberoamericana de psicología del ejercicio y el deporte*, 14(1), 61-65.
- Carapinha, A., Mendes, P., Guedes Carvalho, P., Torregrossa, M., & Travassos, B. (2018). Career Termination of Portuguese Elite Football Players: Comparison between the Last Three Decades. *Sports*, 6(4), 155. <https://doi.org/10.3390/sports6040155>
- Carapinha, A., Torregrossa, M., mendes, P., Carvalho, P. G., & Travassos, B. (2019). A retrospective analysis of retirement of football players in Portugal. *Motricidade*, 14(4), 75-85. <https://doi.org/10.6063/motricidade.14982>
- Cecić-Erpić, S., Wylleman, P., & Zupančič, M. (2004). The effect of athletic and non-athletic factors on the sports career termination process. *Psychology of sport and exercise*, 5(1), 45-59.
- Cham, H., Reshetnyak, E., Rosenfeld, B., & Breitbart, W. (2017). Full information maximum likelihood estimation for latent variable interactions with incomplete indicators. *Multivariate behavioral research*, 52(1), 12-30.
- Cieslak, T., Fink, J., & Pastore, D. (2005). Measuring the athletic identity construct: Scale development and validation. *Journal of Sport & Exercise Psychology*,
- Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic press.

- Côté, J., Baker, J., & Abernethy, B. (2007). Practice and play in the development of sport expertise. In R. Eklund & G. Tenenbaum (Eds.), *Handbook of sport psychology* (Vol. 3, pp. 184-202). John Wiley & Sons.
- Coutinho, P., Mesquita, I., & Fonseca, A. M. (2016). Talent development in sport: A critical review of pathways to expert performance. *International journal of sports science & coaching*, 11(2), 279-293. <https://doi.org/10.1177/1747954116637499>
- Creed, P., Buys, N., Tilbury, C., & Crawford, M. (2013). The relationship between goal orientation and career striving in young adolescents. *Journal of Applied Social Psychology*, 43(7), 1480-1490.
- Debois, N., Ledon, A., & Wylleman, P. (2015). A lifespan perspective on the dual career of elite male athletes. *Psychology of sport and exercise*, 21, 15-26.
- Demulier, V., Le Scanff, C., & Stephan, Y. (2013). Psychological Predictors of Career Planning among Active Elite Athletes: An Application of the Social Cognitive Career Theory. *Journal of applied sport psychology*, 25(3), 341-353. <https://doi.org/10.1080/10413200.2012.736444>
- Dendir, S. (2016). When do soccer players peak? A note. *Journal of Sports Analytics*, 2(2), 89-105.
- Dimoula, F., Torregrosa, M., Psychountaki, M., & Fernandez, M. (2013). Retiring from elite sports in Greece and Spain. *The Spanish journal of psychology*, 16(E38). <https://doi.org/10.1017/sjp.2013.18Publ>
- Drawer, S., & Fuller, C. (2002). Perceptions of retired professional soccer players about the provision of support services before and after retirement. *British Journal of Sports Medicine*, 36(1), 33-38. <https://doi.org/10.1136/bjism.36.1.33>
- Ekengren, J., Stambulova, N., Johnson, U., & Carlsson, I. (2018). Exploring career experiences of Swedish professional handball players: Consolidating first-hand information into an empirical career model. *International journal of sport and exercise psychology*, 1-20. <https://doi.org/10.1080/1612197X.2018.1486872>
- Ekengren, J., Stambulova, N., Johnson, U., Carlsson, I., & Ryba, T. (2019). Composite vignettes of Swedish male and female professional handball players' career paths. *Sport in Society*, 1-16. <https://doi.org/10.1080/17430437.2019.1599201>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior research methods*, 41(4), 1149-1160.
- Fritz, C. O., Morris, P. E., & Richler, J. J. (2012). Effect size estimates: current use, calculations, and interpretation. *Journal of experimental psychology: General*, 141(1), 2.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (Eighth ed.). Pearson Education Limited.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.
- Holding, A., Fortin, J.-A., Carpentier, J. l., Hope, N., & Koestner, R. (2020). Letting Go of Gold: Examining the Role of Autonomy in Elite Athletes? Disengagement from Their Athletic Careers and Well-Being in Retirement. *Journal of Clinical Sport Psychology*, 14(1), 88. <https://doi.org/10.1123/jcsp.2018-0029>
- Hollings, S. C., Mallett, C. J., & Hume, P. A. (2014). The transition from elite junior track-and-field athlete to successful senior athlete: why some do, why others don't. *International journal of sports science & coaching*, 9(3), 457-471. <https://doi.org/10.1260/1747-9541.9.3.457>
- Horton, R. S., & Mack, D. E. (2000). Athletic identity in marathon runners: Functional focus or dysfunctional commitment? *Journal of sport behavior*, 23(2).
- James, N., Taylor, J., & Stanley, S. (2007). Reliability procedures for categorical data in performance analysis. *International Journal of Performance Analysis in Sport*, 7(1), 1-11.
- Knights, S., Sherry, E., & Ruddock-Hudson, M. (2016). Investigating elite end-of-athletic-career transition: a systematic review. *Journal of applied sport psychology*, 28(3), 291-308.
- Kotrlik, J. W., Williams, H. A., & Jabor, M. K. (2011). Reporting and Interpreting Effect Size in Quantitative Agricultural Education Research. *Journal of Agricultural Education*, 52(1), 132-142.
- Lally, P. S., & Kerr, G. A. (2005). The career planning, athletic identity, and student role identity of intercollegiate student athletes. *Research quarterly for exercise and sport*, 76(3), 275-285.

- Lamont-Mills, A., & Christensen, S. A. (2006). Athletic identity and its relationship to sport participation levels. *Journal of Science and Medicine in Sport*, 9(6), 472-478.
- Lent, R. W., & Brown, S. D. (2013). Social cognitive model of career self-management: toward a unifying view of adaptive career behavior across the life span. *Journal of counseling psychology*, 60(4), 557.
- López de Subijana, C., Barriopedro, M., & Conde, E. (2015). Supporting dual career in Spain: Elite athletes' barriers to study. *Psychology of sport and exercise*, 21, 57-64. <https://doi.org/https://doi.org/10.1016/j.psychsport.2015.04.012>
- Martin, L. A., Fogarty, G. J., & Albion, M. J. (2014). Changes in athletic identity and life satisfaction of elite athletes as a function of retirement status. *Journal of applied sport psychology*, 26(1), 96-110. <https://doi.org/10.1080/10413200.2013.798371>
- Moesch, K. (2012). Reasons for career termination in Danish elite athletes: Investigating gender differences and the time-point as potential correlates. *Sport Science Review*, 21(5-6), 49-68.
- Monteiro, R., Monteiro, D., Nunes, C., Torregrossa, M., & Travassos, B. (2020). Identification of key career indicators in Portuguese football players. *International journal of sports science & coaching*, 15(4), 533-541. <https://doi.org/10.1177/1747954120923198>
- North, J., & Lavalley, D. (2004). An investigation of potential users of career transition services in the United Kingdom. *Psychology of sport and exercise*, 5(1), 77-84.
- Park, S., Lavalley, D., & Tod, D. (2013). Athletes' career transition out of sport: A systematic review. *International review of sport and exercise psychology*, 6(1), 22-53. <https://doi.org/10.1080/1750984X.2012.687053>
- Raykov, T., Gabler, S., & Dimitrov, D. M. (2016). Maximal reliability and composite reliability: Examining their difference for multicomponent measuring instruments using latent variable modeling. *Structural equation modeling: a multidisciplinary journal*, 23(3), 384-391.
- Rintaugu, E. G., Mwisukha, A., & Monyeki, M. (2016). From grace to grass: Kenyan soccer players' career transition and experiences in retirement: sport participation. *African Journal for Physical Activity and Health Sciences (AJPHES)*, 22(1.1), 163-175.
- Rogers, M., & Creed, P. (2011). A longitudinal examination of adolescent career planning and exploration using a social cognitive career theory framework. *Journal of adolescence*, 34(1), 163-172. <https://doi.org/https://doi.org/10.1016/j.adolescence.2009.12.010>
- Rogers, M. E., Creed, P., & Glendon, A. (2008). The role of personality in adolescent career planning and exploration: A social cognitive perspective. *Journal of Vocational Behavior*, 73(1), 132-142.
- Samuel, R. D., & Tenenbaum, G. (2011). The role of change in athletes' careers: A scheme of change for sport psychology practice. *The sport psychologist*, 25(2), 233-252.
- Sanders, G., & Stevinson, C. (2017). Associations between retirement reasons, chronic pain, athletic identity, and depressive symptoms among former professional footballers. *European Journal of Sport Science*, 17(10), 1311-1318. <https://doi.org/10.1080/17461391.2017.1371795>
- Schroepf, B., & Lames, M. (2018). Career patterns in German football youth national teams—A longitudinal study. *International journal of sports science & coaching*, 13(3), 405-414. <https://doi.org/10.1177/1747954117729368>
- Stambulova, N., Alfermann, D., Statler, T., & Côté, J. (2009). ISSP position stand: Career development and transitions of athletes. *International journal of sport and exercise psychology*, 7(4), 395-412. <https://doi.org/10.1080/1612197X.2009.9671916>
- Stambulova, N., Pehrson, S., & Olsson, K. (2017). Phases in the junior-to-senior transition of Swedish ice hockey players: From a conceptual framework to an empirical model. *International journal of sports science & coaching*, 12(2), 231-244.
- Stambulova, N., & Ryba, T. V. (2014). A critical review of career research and assistance through the cultural lens: towards cultural praxis of athletes' careers. *International review of sport and exercise psychology*, 7(1), 1-17. <https://doi.org/10.1080/1750984X.2013.851727>
- Stambulova, N., Ryba, T. V., & Henriksen, K. (2020). Career development and transitions of athletes: the International Society of Sport Psychology Position Stand Revisited. *International journal of sport and exercise psychology*, 1-27. <https://doi.org/10.1080/1612197X.2020.1737836>
- Stambulova, N., & Wylleman, P. (2014). Athletes' career development and transitions. In *Routledge companion to sport and exercise psychology* (pp. 629-644). Routledge.

- Stambulova, N., & Wylleman, P. (2019). Psychology of athletes' dual careers: A state-of-the-art critical review of the European discourse. *Psychology of sport and exercise*, *42*, 74-88.
- Taylor, J., & Ogilvie, B. C. (1994). A conceptual model of adaptation to retirement among athletes. *Journal of applied sport psychology*, *6*(1), 1-20.
- Torregrosa, M., Boixadós, M., Valiente, L., & Cruz, J. (2004). Elite athletes' image of retirement: the way to relocation in sport. *Psychology of sport and exercise*, *5*(1), 35-43. [https://doi.org/10.1016/S1469-0292\(02\)00052-3](https://doi.org/10.1016/S1469-0292(02)00052-3)
- Torregrosa, M., Ramis, Y., Pallarés, S., Azócar, F., & Selva, C. (2015). Olympic athletes back to retirement: A qualitative longitudinal study. *Psychology of sport and exercise*, *21*, 50-56. <https://doi.org/10.1016/j.psychsport.2015.03.003>
- van Ramele, S., Aoki, H., Kerkhoffs, G. M., & Gouttebarga, V. (2017). Mental health in retired professional football players: 12-month incidence, adverse life events and support. *Psychology of sport and exercise*, *28*, 85-90. <https://doi.org/10.1016/j.psychsport.2016.10.009>
- Wendling, E., & Sagas, M. (2020). An Application of the Social Cognitive Career Theory Model of Career Self-Management to College Athletes' Career Planning for Life After Sport. *Frontiers in Psychology*, *11*(9). <https://doi.org/10.3389/fpsyg.2020.00009>
- Williams, J., & MacKinnon, D. P. (2008). Resampling and distribution of the product methods for testing indirect effects in complex models. *Structural equation modeling: a multidisciplinary journal*, *15*(1), 23-51.
- Wippert, P.-M., & Wippert, J. (2008). Perceived Stress and Prevalence of Traumatic Stress Symptoms Following Athletic Career Termination. *Journal of Clinical Sport Psychology*, *2*(1), 1. <https://doi.org/10.1123/jcsp.2.1.1> 10.1123/jcsp.2.1.1 10.1123/jcsp.2.1.1 10.1123/jcsp.2.1.1
- Wylleman, P. (2019). A Holistic and Mental Health Perspective on Transitioning Out of Elite Sport. In *Oxford research encyclopedia of psychology*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190236557.013.189>
- Wylleman, P., Alfermann, D., & Lavallee, D. (2004). Career transitions in sport: European perspectives. *Psychology of sport and exercise*, *5*(1), 7-20. [https://doi.org/10.1016/S1469-0292\(02\)00049-3](https://doi.org/10.1016/S1469-0292(02)00049-3)
- Wylleman, P., Reints, A., & De Knop, P. (2013). A developmental and holistic perspective on athletic career development. In P. Sotiriadou & V. d. Bosscher (Eds.), *Managing high performance sport* (pp. 159-182). Routledge.
- Wylleman, P., & Rosier, N. (2016). Holistic Perspective on the Development of Elite Athletes. In M. Raab, P. Wylleman, R. Seiler, A.-M. Elbe, & A. Hatzigeorgiadis (Eds.), *Sport and Exercise Psychology Research* (pp. 269-288). Academic Press. <https://doi.org/https://doi.org/10.1016/B978-0-12-803634-1.00013-3>