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Chapter 1

Introduction

INTRODUCTION

We were all young

Many people admire elite athletes as Usain Bolt, Serena Williams, Frenkie de Jong, and Dafne Schippers. They, and many other sport stars, challenge the human limits and their performances are exceptional. However, do we realize that these athletes were young children once too? What do we know of the capacities of under ten-year-old children who might become successful? And how can we help to develop them? Not much, a recent review of Johnston and colleagues (2018) revealed. For example, there is some evidence that physical and physiological factors change due to maturity and therefore these factors have a low predictive value at young ages. About the stability of cognitive and psychological factors, which also are assumed to be important, and whether these already characterize young children who might become successful in sport not much is known yet (Johnston, Wattie, Schorer, & Baker, 2018; Gledhill, Harwood, & Forsdyke, 2017). A better understanding of young children's characteristics provides opportunities to improve their developmental process. Indeed, those with exceptional capacities will benefit but it is assumed that a better understanding will help to improve the development of all children. The main purposes of this thesis are 1) to identify the physical education (PE) teachers' perceptions of capacities of those under the age of ten who might become successful in sport, and 2) an understanding of the programs that improve these capacities in young children.

The first step

Children start developing their motor skills from an early age. Skills are learned movements and can be simple (e.g., raising your hand, roll) or complex (e.g., rope jumping, somersault jumping) (Schmidt & Lee, 2005). For an optimal development, children must be challenged to improve their skills by instruction and a challenging environment (Clark, 2007; Goodway, Gallahue, & Ozmun, 2013). When all children receive the same opportunities for practice, some children develop faster than others. Whether this is due to nature or nurture remains an ongoing debate (see for example Baker, Wattie, & Schörer, 2019). Both innate and environmental characteristics are assumed to have importance for children's developmental process (Baker & Horton, 2004; Gagné, 2008). The rate of development, which might be an important indicator of future success, can be identified in case children are challenged to improve (Gray & Plucker, 2010; Van Rossum & Gagné, 2006). However, there is a lack of challenging programs for especially those with exceptional capacities. To design programs that better meet the developmental demands of all children, insight into the capacities of those who might become successful in later stages is worthful. Talent development models like Gagné's educational Differentiated Model of Giftedness and Talent (DMGT, 2004) and The Groninger Sport Model (Elferink-Gemser & Visscher, 2012) recognize the interaction between task, environment and individual characteristics for the developmental process. At a young age, children must develop their fundamental movement skills (FMS). FMS

include locomotor skills (e.g., walking, running, hopping), balance/stability skills (e.g., balancing, turning, dodging), and object control (e.g., throwing, catching, kicking) (Gallahue et al., 2012). A higher FMS proficiency is associated with more physical activity at later stages (Henderson et al., 2008; Stodden et al., 2008; Holfelder & Schott, 2014), and with the chances to become successful in sports (O'Brien-Smith et al., 2019; Deprez et al, 2014; Pion et al., 2015; Vandorpe et al., 2012). The development of FMS is also dependent of individual characteristics, as for example motivation, perseverance, learning capacity, and self-regulation skills, influence children's developmental process directly (Abbott & Collins, 2004). Physical education (PE) teachers have an important role in creating an environment in which children are challenged to improve their FMS, even as capacities (e.g., psychological, cognitive) that facilitate the development of these skills.

In The Netherlands, at about half of the schools PE is taught by a professional with a bachelor in PE. At the other half, general primary school teachers with a PE qualification teaches the children (allesoversport.nl).

Physical education

Physical education (PE) is an important organized setting being all children stimulated to develop their motor skills in a structured manner under the supervision of professionals with qualified pedagogical and educational skills. In regular Dutch PE classes children are offered a diversified program by an educational, pedagogical, and movement specialist. In literature, the importance of a diversified program at around 6 to 12 years of age (i.e., the sampling years) instead of specializing in one sport for sustainable participation and future success receives support (Côté, 1999; Baker, 2003; Ford et al., 2012; Feeley, Agel, LaPrade, 2016; Fransen et al., 2012). Most common tools to identify and programs to develop children's skills in PE are designed for the average or children with motor difficulties. More recently, there is an increasing awareness that also those children with exceptional developmental rate and performances deserve attention in PE. PE teachers in primary education could initial assess and develop these children and, in that way, serve as a bridge between PE and sport (Gulbin et al., 2010). Often, sport is the domain where those children can excel in the future. Although PE and sport are not the same, clear similarities exists (Mountakis, 2001).

Regarding the chance to become successful, Persson (2002) noted the absence of research on athletic identification in journals that aim to publish about high ability and education. Research focusing on the capacities and other individual factors that explain differences in development and performance between young children shed new light for researchers and practitioners on the underpinnings of talent identification and talent development programs. Based on Gagné's DMGT (2004), Bailey and Morley developed the Model of Talent Development in Physical Education (Bailey & Morley, 2006). The main outcome of PE is to stimulate all children to have a physical active lifestyle and prepare them to participate in the domain of sport and exercise. According to the model, PE can also contribute to elite sport performance as PE should meet the educational needs of all children, also of

those with exceptional capacities. A main advantage of an educational approach is that it might result in a larger group of children who might become successful in sport than the current selective sport-based approach (Bailey & Morley, 2006).

Rationale and research questions

This thesis focuses on four main questions. That should result in 1) a better understanding of the capacities of those children under the age of ten who might become successful in sports and 2) program's that contributes to the development of these capacities in young children. The four main questions are:

- What in PE teachers' perceptions are capacities of children under the age of ten who might become successful in sports?
- How can these capacities be assessed in applied settings?
- Are current selected children characterized by these capacities identified by PE teachers and/ or sport-specific performance skills?
- What are the outcomes of intervention programs to develop these capacities in 6-10-year-old children?

Chapter 2 describes PE teachers' perceptions of children who might become successful in sport. A self-administered questionnaire was sent to PE teachers working in primary schools. The questionnaire was based on the Model of Talent Development in PE (Bailey and Morley, 2006) and a literature review. PE teachers with their educational background are considered to be well able to generally consider a range of factors that underpin the capacity of young children to become successful in sports. The results of this study are a first step in the development of an instrument for the initial assessment of those who might become successful. Chapter 3 continues the outcomes of study 1. The main aim is to determine whether at a young age regardless of type of sport similar capacities are most important characteristics of future successful athletes. This would provide support for general developmental approach at young ages. Chapter 4 focuses on the development of a tool to assess children's FMS performance in applied settings. FMS are essential building blocks for the development of more sport specific skills in later stages. A tool that can easily assess these skills in applied settings could be of high value, for researchers and practitioners. Chapter 5 addresses the question whether there are differences in selected and deselected players for the under 11 of a professional youth football academy on physical, technical, and gross motor coordination, as well as on capacities identified by the PE teachers. These results provide insight in the characteristics of young players selected and deselected in the most practiced sport in The Netherlands. In chapter 6 the importance of challenging children for the improvement of FMS proficiency in six and seven-year-olds is addressed. Evidence-based programs to develop young children's FMS are of huge importance for the quality of PE lessons. Chapter 7 addresses the individual differences in FMS proficiency and changes therein over time. Some children have a higher

proficiency and develop their FMS quicker than others. A better understanding of the individual capacities that could explain these differences provide insight into relevant underlying mechanisms of the developmental processes.

In chapter 8, the findings of the above-mentioned studies are discussed. Finally, recommendations for future research, practical implications and opportunities for PE and sports, as well as conclusions are presented.

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