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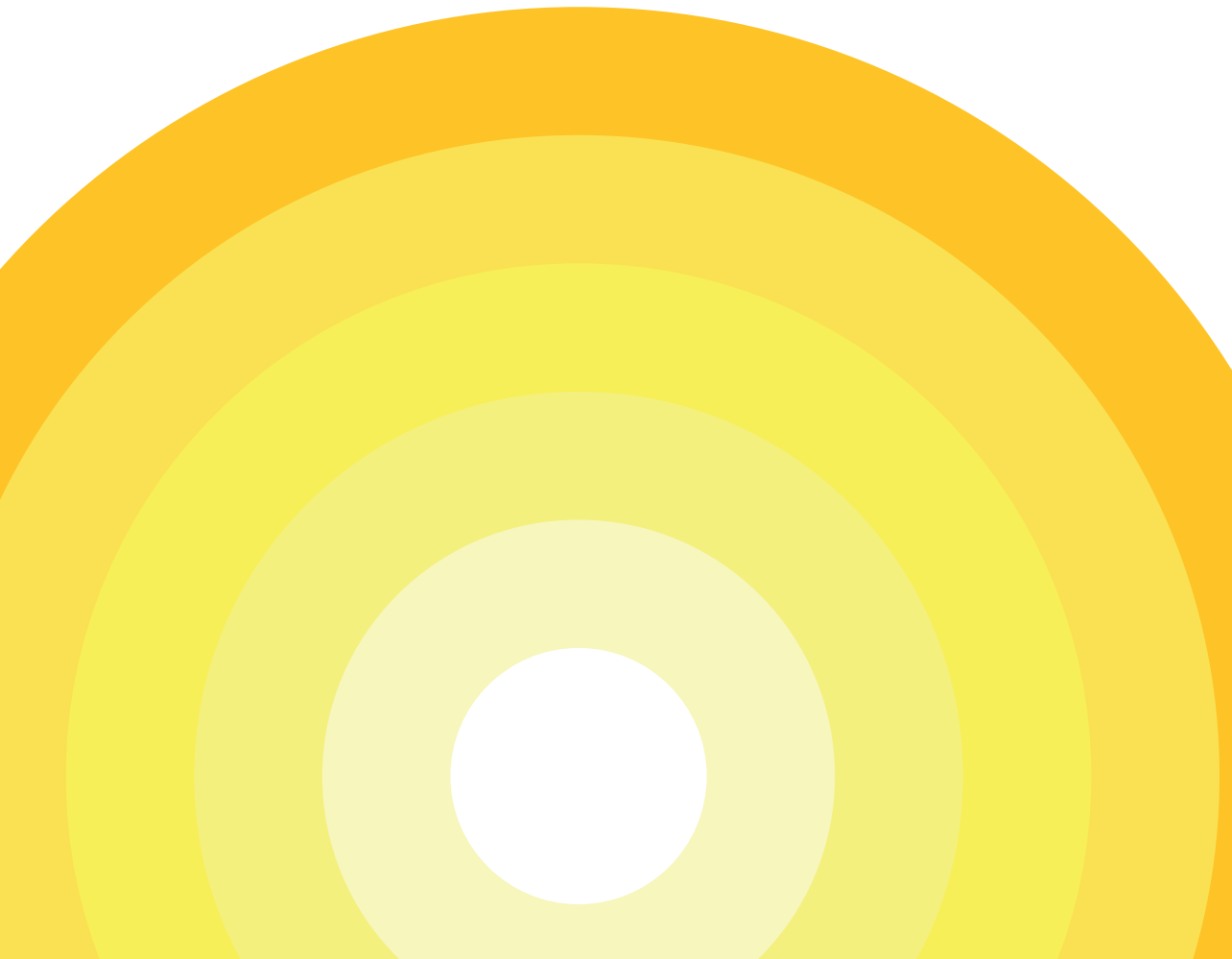
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Summary



Background & aim

A better understanding of the capacities of under ten-year-old children who might become successful in sport provides opportunities to improve the developmental process of all children. Still, in literature, there is only limited attention for this population with scarce numbers of research on athletic identification in journals that aim to publish about high ability and education. 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. From a young age, the development of fundamental movement skills (FMS) is highly relevant. Well-developed FMS are associated with more physical activity at later stages and with the chances to become successful in sports. The development of these skills is under influence of individual characteristics (e.g., capacities as perseverance, self-regulation) as well as the environment of the children. An important setting where children can develop their FMS and the capacities that facilitate the development of these skills are primary school physical education classes. However, up to today, children with exceptional motor capacities did not receive much attention in physical education classes. A main advantage of an educational approach is that a larger group of children who might become successful in sport can be reached than applying the current selective sport-based approach.

This thesis focuses on four main questions.

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

Chapter 2 & 3

Understanding physical education teachers' perceptions of what factors best describe those with sport potential would be helpful for developing tools that physical teachers can use to more accurately identify and improve the process of talent development. These studies aimed to determine physical education teachers' perceptions of those children with the potential to become successful in sports and whether there are differences in these children's capacities between team-open and individual closed-sports. First, 172 PE teachers scored 66 items, measured on a five-point scale, that were formulated on Bailey and Morley's model of talent identification in PE. A Principal Components Analysis resulted in the 27-item Scale for Identification of Sport Potential (SISP). Scales were labelled Work Attitude Capacity ($M = 4.32$, $SD = 0.64$), Sport Learning Capacity ($M = 4.31$, $SD =$

0.50), Motor Capacity ($M = 3.89$, $SD = 0.63$), Creative Capacity ($M = 3.76$, $SD = 0.64$), Interpersonal Capacity ($M = 3.40$, $SD = 0.66$), and Intellectual Capacity ($M = 2.95$, $SD = 0.77$). Second, 114 physical education experts' ($M_{age} = 41.4$, $SD = 13.2$) in team-open ($n = 63$) or individual-closed sports ($n = 51$) filled in the Scale for Identification of Sport Potential (SISP). Regardless of the type of sport, experts rank work attitude capacity and sports learning capacity as most important in early childhood athlete identification processes.

Chapter 4

The main aim of this study was to evaluate a new combination of test items on its practical use as a tool for determining the broad spectrum of fundamental movement skills performance in six to ten-year-old primary school children. For this purpose, 1121 primary school (6-10 years of age, 559 boys) children were assessed during their regular PE class using three test items of the Körper Koordination Test für Kinder (KTK), i.e. walking backwards (WB), moving sideways (MS), jumping sideways (JS), and a hand-eye coordination test item (EHC). Significant effects for sex and age were found. Girls outperform boys on WB and boys outperform girls on EHC ($P < 0.05$). On all test items children of a certain age group scored better than their 1-year younger peers, except at WB between 10 and the 8- and 9-year olds and at MS and JS between 9-year olds and 10-year olds. Moderate positive associations between the test items were found ($P < 0.05$). An 80.8% agreement of classification of children was found based on the MQKTK-3 or the MQKTK-3 + EHC. The KTK-3 + EHC appear to adequately cover different aspects of the fundamental movement skills. The tool offers opportunities to better meet children's individual developmental needs and evaluate the effectiveness of professionals' own practices.

Chapter 5

Every year, approximately 800 (0.5%) of the 180,000 six- to ten-year-old football players in the Netherlands are selected to attend one of the 26 professional youth football academies. This study aimed to determine whether players selected for the under 11 (U11) team of a professional youth football academy outperform their deselected peers in physical, technical and gross motor coordination skills, or in psycho-social capacities. Of the young players active at different amateur clubs yearly 2% were scouted to participate at trainings and matches from an academy before the first objective baseline testing (season 1 $n=54$, season 2 $n=49$, age, 9.25 ± 0.46). Mann-Whitney U-tests showed that the selected U11 players ($n=31$) from the reduced pool outperformed their deselected peers ($n=72$) in the 30-metre slalom sprint, dribble test and Loughborough soccer passing test, and on sport learning-, motor-, creative-, and interpersonal capacity ($P < 0.05$). A discriminant analysis resulted in a significant discriminant function (Wilks' $\Lambda = 0.673$, $df = 16$ and $P = 0.002$) with 69.6% of players classified correctly. The current system tends to scout nine-year old soccer players with multiple years of soccer experience, and well-developed motor skills, who are predominantly born in the first quarter of the

year. Of those players, the ones with better physical and technical skills, who are believed to have most potential to become elite in the future are selected. However, 25 of the players with a high probability of being selected were deselected.

Chapter 6 & 7

Relatively little is known about how practice relates to children's improvement in gross motor skill proficiency and about the intrapersonal mechanism that drives and explains individual differences in improvement. These studies aimed to determine 1) to what extent 6- and 7-year-old children improve their gross motor skill performance in a four-week period, in which goal-directed learning is stimulated and to determine whether differences between boys and girls occur, and 2) whether in teachers' perceptions, higher sport-learning capacity (SLC) is associated with the level of fundamental movement skills, and the changes therein over 24 weeks in 7-year-olds. Six- and 7-year-olds were goal-directed by the physical education teacher's instruction, the skill-specific exercises, and individual practice. Both 6- and 7-year-olds in the intervention group ($n = 294$) improved their gross motor skill proficiency significantly more than the control group ($n = 131$). The results show the relevance of goal-directed learning for the improvement of gross motor skill performance. In the last study, we assessed 170 children (all aged 7 at the first measurement, 78 boys, 92 girls) from eight primary schools in the Netherlands twice in 24 weeks, using a tool to assess their FMS in applied settings. The schools' eight PE teachers used a digital questionnaire to score their perceptions of children's SLC. Based on their SLC, each child was then placed in the low ($n = 33$), average ($n = 107$), or high SLC-group ($n = 30$). We used a MANOVA to examine group differences, with the four subtests as dependent variables. In sum, we found an association between children's SLC and level of FMS and changes therein; this was especially pronounced in children with a lower SLC, who had a lower proficiency and improved less on the subtest moving sideways.

Discussion & Conclusion

In PE teachers' perceptions children under the age of ten who might become successful in sport are characterized by work attitude capacity, sport learning capacity, motor capacity, creative capacity, interpersonal capacity, and intellectual capacity. The importance of especially work attitude capacity and sport learning capacity, regardless the type of sport, support more general sport and physical education program content for young children. Differences in relevance of the motor, interpersonal and creative capacity between sports might be explained by the different requirements in individual-closed and team-open sports. To determine to which extent children can develop these capacities at young ages, it is required to assess the capacities in applied settings. For the motor capacity, the KTK3+ test, has shown to be a valuable tool. To gather the data, a web application is used with which time PE teachers must invest to objectively assess children's locomotor, stability/balance and object control skills in applied settings is minimized. Work attitude capacity, sport learning capacity, and interpersonal capacity are assessed

by teachers' or coaches' perceptions. Professionals working with children weekly or daily are expected to be well able to observe and assess these skills. Intellectual capacity can be identified in other courses at school. A remaining challenge for future research is how to objectively assess and develop this capacity in young children in the setting of PE and sport.

In the setting of sport, players are selected at young ages. The selected players outperformed the deselected players on most of the physical and football-specific measurements and on sport learning capacity, motor capacity, creative capacity, and interpersonal capacity. Our study revealed also that 25 players with a, based on their test scores, high probability were deselected. To improve current talent identification and talent development processes, young players should be given more time to develop (i.e., select at later ages) and academies are advised to make use of more objective measures to monitor players' development. In case we provide all children with better programs in a challenging environment in which they can improve their skills, academies have one reason less to select at early ages.

Children who are challenged by goal-directed learning, improve their FMS proficiency within four weeks. In our intervention, goal-directed learning was stimulated by goal-directed instruction, goal-directed exercises, and goal-directed individual practice. Especially the seven-year-olds improved themselves. At that age children are probably in a more favourable phase of goal-directed learning to improve their FMS proficiency than the six years old. Although on average the children improved after a four-week goal-directed learning intervention, there are differences in improvement between children. Children's sport learning capacity might provide an explanation for the differences between children. Those children with a higher proficiency improved more on the subtest moving sideways than those in the lower sport learning capacity group. There are motivational and cognitive items underlying the sport learning capacity which relevance for predicting achievement have been shown before in other school courses. As children develop their FMS proficiency in a diverse range of settings, the specific contribution of sport learning capacity is a challenge for future studies.

This thesis provided answers on four main questions. The answers on these questions shed new light on the understanding of the underlying processes of talent identification and talent development. I believe that not only those children with capacities to become successful in sport benefit of our studies, but all children. PE teachers and sport coaches working with young children should focus on the development of the six capacities. Well-developed capacities enable children to get the most out of their own abilities and have them experience the pleasure and excitement sport can offer.

