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Doctoral (PhD) Dissertation Thesis

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The Success of Speed Skating Sports: The Long-Term Athlete Development Program as a Development Opportunity

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Introduction

The success of universal Hungarian sports is significantly influenced by the educational impact of sports pedagogy, which is a defining part of our culture. Behind every successful sports performance are role models and life stories that are the results of effective pedagogical processes. Sport is not just about competition; its educational role is crucial for achieving excellent results and shaping role models for future generations.

In the early 2000s, the Hungarian National Skating Federation (MOKSZ) committed to the internationally recognized Long-Term Athlete Development (LTAD) system envisioned by Hungarian-born István Balyi. In 2018, short track speed skating achieved Hungary's first Winter Olympic gold medal in the men's relay, and in 2022 the team returned from Beijing with three Olympic medals, including an individual gold, marking another historic achievement in Hungarian sports.

The holistic approach of the LTAD program supports the long-term development of athletes, emphasizing the realization of genetic potential and the principles of fair play, with coaches and parents playing key roles in this process (*Telegdi et al.*, 2020; *Frankish et al.*, 2012; Black & Holt, 2009). However, they face challenges, such as the lack of knowledge and support for coaches (Trudeau et al., 2021; Beaudoin et al., 2015). Sport plays an important role in the overall development of individuals and the shaping of their personalities, but this requires the support of family, school, and the social environment as well (Telegdi et al., 2020; Biróné, 2011). Coaches and teachers' attitudes and views impact athletes' development and success, as sports have a significant personality-shaping effect (Bognár, 2010; Zafeiroudi et al., 2020). Coaches need not only pedagogical knowledge but also effective communication skills, as positive and consistent communication can significantly influence athletes' performance (Kanczler & Nagykáldi, 2008; Czechowski & Zukowska, 2010). It is important to use both verbal and non-verbal tools, and their messages must be precise and appropriate to the goal. Physical education provides versatile development, including cognitive, affective, psychomotor, and social learning, where sensory and motor elements are important alongside verbal communication (Bognár, 2011). Emotional components, interest, and motivation are crucial in motor learning, while the sport-specific development of conditioning and coordination skills optimizes athletes' performance. Youth development and talent nurturing are crucial for the holistic development of athletes, where coaches' responsibilities lie in selection and differentiated training (*Côté & Gilbert*, 2009). Successful coaching is defined by integrated professional knowledge, the consistent application of human values, and a welldeveloped training system (Jenny & Hushmann, 2014). Coach education is vital for the success of sports and the nurturing of talents; therefore, coaches must possess extensive competencies, and the training should be regular and integrated ($C\hat{o}t\acute{e}$, 2006). Collaboration between institutions and federations is of paramount importance, and the training must ensure opportunities for continuous development. Competitive sports and recreational sports constitute the two main areas of the sports world. Elite athletes have dual careers, involving competition and parallel activities in other fields. It is crucial that they address their future plans and life preparation from the beginning of their careers ($Telegdi \& Bogn\acute{a}r$, 2022).

Objective

Research Objectives

The aim of the study is to present the expectations, educational methods, communication strategies of coaches involved in Hungarian speed skating, as well as the development opportunities for motor skills, talent, and youth development. Another objective is to analyze the knowledge related to the LTAD program and its practical application, coaches' competencies, educational activities, communication, interactions, and the support for dual career.

Hypotheses

I hypothesize that in the sport of speed skating, Long-Term Athlete Development (LTAD) has not been integrated into daily practice, and participants in the sport (coaches, athletes, parents, sports officials) do not hold consistent views on coaches' expectations and competencies (H2a), the educational activities and environment affecting the athlete's everyday life (H2b), communication and interaction (H2c), the role of motor skills (H2d), and youth development, along with talent nurturing, and success (H2e). Furthermore, I assume that comprehensive development opportunities can be utilized in terms of personal and material environment with the assistance of the theoretical framework of LTAD, which provides excellent opportunities for training and further education (H3), but the support for dual career in the sport and its system have not yet been integrated into daily activities (H4).

Methods

The research employed an inductive empirical strategy, utilizing both descriptive and exploratory methods, including document analysis, semi-structured interviews, and questionnaire surveys, limited to the fields of educational science and sports science. To ensure scientific credibility and data representativeness, the study involved nearly the entire population of Hungary and engaged participants working in various positions. The research focused on questions related to long-term athlete development, coaching expectations, educational activities, communication, motor skills, youth development, talent nurturing, development opportunities, and dual career.

Studied Sample

The sample consisted of a total of 204 participants who participated in the research within the framework of the Hungarian National Skating Federation. The sub-samples included coaches (N=32), athletes (N=85), one parent of the athletes (N=85), and sports officials (N=2). In the semi-structured interviews, a total of 20 participants took part (N=20), including 6 coaches (N=6), four male and two female, with an average age of 39.6 years and coaching experience ranging from 3 to 25 years. Among the 6 athletes (N=6), four were female and two were male, with an average age of 19.5 years and competitive experience ranging from 9 to 16 years. Among the 6 parents (N=6), three were mothers and three were fathers, with an average age of 44.3 years. Among the two sports officials (N=2), one was female and one was male, both with university degrees, and they had direct contact with coaches and athletes. Among the questionnaire participants, there were a total of 164 respondents (N=164), including 26 coaches (N=26), 9 females and 17 males, with an average age of 36.5 years. There were 69 athletes (N=69), 32 females and 37 males, with an average age of 16.39 years. Among the 69 parents (N=69), 51 were females and 18 were males, with an average age of 44.84 years, most of whom had previously participated in sports at amateur or competitive level.

Data Collection

Document Analysis

The document analysis examined six (N=6) official documents of the Hungarian National Skating Federation (MOKSZ), including the federation's strategy, operational regulations, and internal coaching materials. The analyzed documents included the federation's Sports Strategy and Organizational and Operational Regulations of MOKSZ from 2016, the Information

Brochure on Long-Term Development Program of Skating Sports issued in 2017, the Educational Brochure on Long-Term Development Program of Speed Skating Sports from 2020, and the Overview of the Long-Term Development Program of Speed Skating Sports for Parents issued in 2021.

Semi-Structured Interviews

During the interviews, mainly open-ended questions were asked, and the duration and location of the interviews were arranged in advance with the interviewees.

Questionnaire

The questionnaires were completed anonymously and independently, accompanied by an information sheet for participants outlining the purpose of the research and ensuring anonymity. The questionnaires were distributed to all active speed skating coaches in Hungary, athletes over the age of 14, and one of their parents. The questionnaire consisted of 88 questions, which respondents evaluated on a four-point Likert scale.

Data Processing

During the document analysis, I examined federation documents, publications, and coaching materials related to LTAD. Data were collected and organized based on research hypotheses related to the topic. During the interviews, data were collected based on interviewer notes and thematic schemes developed in accordance with Willis's (2015) suggestions for summarizing interview texts. I employed an interpretative cognitive interview analysis model for analysis, identifying common themes and codes to draw conclusions (Mujdricza & Földvári, 2018). Responses from the questionnaires were converted into numerical values, and I processed them using Microsoft Excel and IBM SPSS 24 software, applying descriptive statistics, ANOVA tests, t-tests, and discriminant analysis. Neutral responses were excluded from the Likert scale, and a significance level of 5% was set.

Results

Information related to the everyday practical application of Long-Term Athlete Development (LTAD) in speed skating is exclusively found in LTAD-related publications, which extensively cover the importance of long-term planning, the characteristics of sensitive periods, and the possibilities for unfolding genetic potential. Most coaches apply this principle,

which is known and supported by the majority of athletes and parents. However, challenges arise in communication and joint planning between parents and coaches. Questionnaires indicated that the importance of achievable challenges set by coaches is outstanding in the long-term athlete preparation process ($M=3.78\pm0.44$), followed by successes achieved in adulthood ($M=3.68\pm0.48$). Regular discussion of short-term goals with the coach is important for athletes and parents ($M=3.38\pm0.68$), but communication with parents and coordination of long-term goals still need improvement ($M=2.90\pm0.98$). The most influential factors include regular discussion of short-term goals with the coach, alignment on long-term goals, and lifestyle.

Regarding the expectations towards coaches, organizational documents highlight athletecentered and value-based preparation compared to the traditional performance-oriented approach. Organizational documents emphasize coach training and age-appropriate activities, while informational materials emphasize coach-parent cooperation. In interviews, sensitive communication skills and empathy from coaches alongside professional knowledge, pedagogical, and psychological skills, which influence coach-athlete relationships and athlete development were expected from coaches. According to questionnaire examinations, the most important factors were the coach's professional knowledge (M=3.84±0.41), coaching methodology (M=3.84±0.37), and motivational basis (M=3.81±0.62). The least determining factors were the coach's gender (M=1.72±0.89), the coach's cultural background if foreign (M=1.90±0.83), and the coach's age (M=2.00±0.82). Significant differences were found in ten cases, among which the coach's pedagogical readiness (F=11.796; p=0.000) and coaching qualifications (F=14.247; p=0.000) were more important for parents than for coaches and athletes. Athletes assign greater importance than coaches or parents to communication with the coach (F=4.080; p=0.019), challenges offered by the coach (F=5.928; p=0.003) and asserting their personality during training (F=31.358; p=0.000). The most characteristic factors are challenges offered by the coach, support of the expression of the athlete's personality by the coach, and the coach's knowledge and sophistication.

Regarding the impact of *coaching activities and environment on athletes' lives*, online educational documents contained detailed information, especially the Long-Term Development Program for Speed Skating. They emphasized creating a positive environment and coach-parent cooperation. Interviews showed that coaches and parents are considered the most important educational factors, while athletes and parents highlight fair play, perseverance, and respect in sports. Leaders emphasized the importance of coach training and credibility. According to the questionnaires, coaches, parents, and athletes attach equal importance to lifestyle (M=3.79±0.40) in the educational activities of sports. Secondly, they highlighted positive traits

that assist in performing tasks outside of sports ($M=3.75\pm0.43$). Among the most characteristic factors is family psychological support ($M=3.73\pm0.59$). The least characteristic factors include the coach's assessment of the importance of learning ($M=2.30\pm0.88$) and the development of psychological abilities ($M=2.41\pm0.77$). Coaches significantly prioritize learning alongside sports (F=9.411; p=0.000), and coaches feel more characteristic statements regarding collaboration with parents (F=3.355; p=0.037) compared to statements directed towards parents and athletes. The most characteristic factors among coaches, parents, and athletes are the coach's emphasis on learning alongside sports, support from the sports club or federation, and moral support from the family.

The importance of communication and interaction among coaches, athletes, and parents is emphasized in the Sports Strategy, the Organizational and Operational Regulations, and, in the Long-Term Development Program for Speed Skating. Coordination, feedback, and setting common goals are considered important from the perspectives of all participants mentioned in both documents and interviews. Coaches are generally active in communication and collaboration, while parents often miss this interaction, especially at the youth level. Leaders believe that the federation performs well in this area, but further strengthening is needed in communication and collaboration. According to the questionnaire results, coaches, parents, and athletes agree that athletes need to know their tasks during training or competition, and regular communication and information sharing with coaches are essential (M=3.55±0.61). The biggest difference between coaches and athletes is that coaches generally consider athletes' opinions in preparation (M=3.53±0.69), while athletes feel more like they only follow the coach's instructions (M=2.32±0.94). The lowest values were given to regular goal-setting discussions with teachers and physical education teachers (M=1.68±0.92 and M=1.82±0.96), indicating that teachers and physical education teachers are less involved in coordinating and communicating short-term goals. The most characteristic factors among coaches, parents, and athletes include the fact that athletes generally only follow the coach's instructions in preparation and competition, regular communication and collaboration with parents, and athletes generally always knowing their tasks during a given training or competition.

Regarding *motor skills*, the documents highlight the importance of developing conditioning and coordination skills in speed skating, while according to interviews, coaches and athletes consider developing coordination and speed important during training. However, parents are less informed about the development of motor skills. According to the questionnaires, the most important motor skills in speed skating include conditioning (M=3.75±0.44) and coordination (M=3.71±0.59) skills, while joint mobility and muscle relaxation are considered less important

(M=3.39±0.87). Coaches believe that technical skill (F=0.993; p=0.026) is the most determining factor compared to athletes and parents. There was no significant difference in the assessment of motor skills among coaches, parents, and athletes.

Regarding talent development and success, most documents lack detailed joint goal-setting in talent development and nurturing, with only the Long-Term Development Program for Speed Skating addressing this in detail. During interviews, coaches and athletes emphasize the importance of supporting talented athletes, paying particular attention to differentiated work and individual training. Coaches especially emphasize cognitive abilities and intelligence, while parents and leaders stress the importance of education and pedagogical processes. Differences in the concept of success are evident, as coaches and athletes prioritize performance in sports, while parents and leaders see success as joy and health. According to the questionnaires, participants believe that successes achieved in adulthood are the most important (M=3.68±0.48), while talented athletes feel pressure if they do not perform as expected (M=3.63±0.70). Coaches highlight adult successes (F=96.440; p=0.000), while athletes attach greater importance to coaching expectations (F=15.910; p=0.000). Parents believe it is important for their children to work harder than their opponents (F=11.901; p=0.000), while coaches believe luck or fate has less influence on athletes' performance (F=36.672; p=0.020). The three most defining significant factors, according to coaches, athletes, and parents, are that a talented athlete strives to meet their coach's expectations, the successes achieved in youth, and a talented athlete strives to meet the expectations of their teammates.

In terms of development opportunities, coach education and training are prominently featured in the Sports Strategy and the Organizational and Operational Regulations, while the development programs for speed skating touch on this area to a lesser extent. During interviews, coaches, athletes, parents, and leaders all consider coach education and training important. The demand for coach education includes the lack of self-education and internal training, as well as the need for involvement of foreign experts. Athletes and parents particularly support this in the areas of psychology and communication. Leaders consider coach education critically important and plan to involve all participants in training, as well as create informational materials and publications. The most important factors for coaches, athletes, and parents include the coach's professional knowledge $(M=3.84\pm0.41),$ methodological knowledge (M=3.84±0.37), and motivational skills (M=3.84±0.62). The lowest values were attributed to foreign coaches speaking a foreign language (M=2.51±0.92). Parents consider the coach's flexibility (F=10.192; p=0.000), pedagogical preparedness (F=11.796; p=0.000), and sports qualifications (F=14.247; p=0.000) more important than coaches and athletes. Coaches

prioritize coach education and self-education (F=5.999; p=0.000), as well as organized training and further education (F=7.872; p=0.000) more than parents and athletes. Parents find the coach's culture and education more influential (F=9.60; p=0.000) compared to coaches and athletes. The three most significant determining factors among coaches, parents, and athletes are the coach's sports qualifications, the coach's flexible problem-solving abilities in the face of obstacles, and the coach's culture and education.

Regarding dual career support, which entails supporting both sports and education simultaneously, this concept is variably presented in the examined documents. While the Sports Strategy and the Organizational and Operational Regulations do not emphasize this concept, the Long-Term Development Program for Speed Skating addresses it prominently. Additionally, the information leaflets for parents emphasize the career opportunities for athletes after finishing their careers. During interviews, opinions among coaches, athletes, parents, and leaders are divided on the importance of dual careers, although generally coaches support education alongside sports, athletes prioritize their future, parents emphasize their child's dual career, and leaders identify shortcomings in support. In the questionnaires, the statement "the coach collaborates with the school and teachers" received the highest value (M=3.09±0.70), while the statement "the coach considers academic achievement appropriate to the abilities" received the lowest value (M=2.30±0.88). Coaches consider collaboration with the school and teachers most characteristic (F=4.632; p=0.011), while parents consider coaches' emphasis on education alongside sports most characteristic (F=9.411; p=0.000). There was only one significant variable identified as a determining characteristic among coaches, athletes, and parents, which is the importance the coach places on education alongside sports.

Discussion

Based on the results of the study, coaches, parents, and athletes agree that the professional knowledge and motivational abilities of coaches are crucial for the long-term development of athletes. They emphasize the importance of supporting talented athletes and individualized training, mentioning the challenges provided by coaches, as well as their pedagogical and psychological expertise. Successful communication and collaboration are also vital for the development and performance of athletes.

Long-term athlete development as an everyday practice

H1: I assume that long-term athlete development (LTAD) in speed skating has not been integrated into everyday practice.

The hypothesis was confirmed, as significant differences in the opinions of coaches, parents, and athletes emphasized the importance of designated challenges and achievements in adulthood.

Expectations towards coaches

H2a: I assume that participants in speed skating (coaches, athletes, parents, sports officials) do not hold unified views on expectations towards coaches and coaching competencies.

The hypothesis was confirmed, as significant differences among participants in speed skating were observed regarding expectations towards coaches and evaluations of coaching competencies, indicating differing views and priorities within the coach-athlete-parent-sports official dynamic in the sport.

Educational activities and environment influencing athletes' lives

H2b: I assume that participants in speed skating (coaches, athletes, parents, sports officials) do not hold unified views on educational activities and the environment influencing athletes' sports-related and everyday lives.

The hypothesis was confirmed, as significant differences among coaches, parents, and athletes in speed skating were observed regarding the importance of athlete education and the environment, suggesting varying priorities and perspectives on educational activities and environmental support in the sport.

Communication and interaction

H2c: I assume that participants in speed skating (coaches, athletes, parents, sports officials) do not hold unified views on communication and interaction, leading to ineffective functioning.

The hypothesis was confirmed, as differences in communication and interaction among coaches, athletes, parents, and sports officials in speed skating were observed, indicating that relationships may be hindered, which could impede collaboration and development. Low-quality communication identified in the studies could negatively impact expectations and evaluations.

Motor skills

H2d: I assume that participants in speed skating (coaches, athletes, parents, sports officials) do not hold unified views on the role of motor skills.

The hypothesis was confirmed, as participants in speed skating differed in their assessment of the importance of motor skills, with coaches preferring technical skills while athletes and parents considering them less crucial, which could affect athletes' development.

Talent development, youth training, and success

H2e: I assume that participants in speed skating (coaches, athletes, parents, sports officials) do not hold unified views on talented athletes, youth training, and success.

The hypothesis was confirmed, as significant differences among participants in speed skating were observed regarding views on talented athletes, youth training, and success, indicating a lack of complete consensus on these issues.

Development opportunities

H3: I assume that extensive development opportunities can be utilized in terms of personal and material environment through the theoretical framework of long-term athlete development, with education and training providing an excellent platform.

The hypothesis was confirmed, as the study established that coaches, parents, and athletes agree on the importance of coaches' professional knowledge and motivational abilities, while differences were noted in the priorities of coaches and parents, emphasizing the significance of coach education and training in speed skating.

Dual career

H4: I assume that the support and system of dual careers in the sport have not yet been fully integrated into everyday activities.

The hypothesis was confirmed, as the study results indicated that support for and systems of dual careers have not been fully integrated into the everyday practice of speed skating, as coaches generally assign low priority to monitoring and supporting athletes' academic achievements.

Recommendations, Further Research Directions

Based on the research, I have proposed recommendations for the long-term development of speed skating, including improving communication and relationships, emphasizing the importance of coach education and personality development, highlighting the need for parental support, and ensuring ongoing education for participants. Further research opportunities include examining the domestic experiences of LTAD in other sports, analyzing LTAD systems in speed skating in other countries, as well as conducting long-term and comparative studies on mental factors, dropout rates, and the dual career pathway.

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