HIGH-PERFORMANCE JUDO ORGANIZATIONAL FACTORS INFLUENCING THE INTERNATIONAL SPORTING SUCCESS

The international high-performance sport shows two major trends in the past years. Firstly, an increasing number of countries that are seeking success in major world sporting events; secondly, an increasing number of countries that developed the ability to win medals in the international context. Despite this increase in competitiveness, in the international high-performance sport context there are usually only few women and minority teams, however, some countries are on the path to international sporting success and others are not. In this context, researchers and managers have a great interest in analyzing the existing sports policies in different countries in the search of explanations for the international sporting success achieved by some countries and not by others. Recently, the studies have further advanced the field of sport policies by studying certain aspects of the high-performance sport policies and key success factors of specific sports. Like the competitive advantage of nations in economic context, no nation can be competitive in everything, therefore nations may specialize in one or few sports.

The objective of this research was to identify the organizational factors influencing the international sporting success in international high-performance judo. Organizational factors were identified as manageable factors in system. The concept is originally from Systems Theory, which defines, “systems” as a whole, comprising interrelated elements that are integrated to accomplish a clearly defined objective. Systems Theory and other studies on high-performance sport policies (in this case, mainly the Sports Policy factors Leading to International Sporting Success model) could contribute to the perception of the systemic elements that influence the sports development and the organizational factors of the international sporting success.

To fulfill the objective of this research, a Sequential Exploratory Design was used, which involves an initial phase that collects and analyzes qualitative data, followed by a second intermediate phase related to the development of a measurement instrument, and a third which involves the collection and analysis of quantitative. Through Content analysis of interviews with 11 international high-performance (judo) stakeholders (athletes, coaches, performance directors and experts), in initial qualitative phase 11 categories and 46 subcategories were identified, which were considered the dimensions and the organizational factors influencing the international sporting success in high-performance judo respectively. It was verified that the results are similar to other studies and models. Thus, the purpose of investigating sport policies or high-performance sport systems. However, specific judo characteristics that cause them to be organizational factors influencing the international sporting success were identified. Furthermore, based on the Systems Theory environmental factors that influence the development of judo in different countries and consequently that influence the reach of international success were also identified. From these results, the “Judo Organizational Factors Influencing the International Sporting Success” (JUDO-ORISS) model was developed. A questionnaire developed and validated by Content Validation of six experts in the second phase allowed the model validation in a third quantitative phase, which proceeded an Exploratory Factor Analysis on data released in a sample of 406 Brazilian judokas, divided into athletes, coaches, performance directors and experts. It was found through the Exploratory Factor Analysis that the organizational factors influencing the international sporting success in high-performance judo were correlated and validated. The results in the third phase suggested that the search for international sporting success in high-performance judo depends upon the existence of all identified organizational factors, probably on their relationship and the existing environment in different countries.

The main strengths of this research were the use of a systemic approach, the research design and the validation process adopted, even this validation process was consistent only with the specific context present in this research. As to its theoretical contribution, this research adds to the understanding of sport policies and high-performance sport systems, since specific

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High-performance Judo: organizational factors influencing the international sporting success

Leandro Carlos Mazzei

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LEANDRO CARLOS MAZZEI

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"Love does not hold, but release!
You must love because it is good for you, but you cannot expect something in return.
If you create too much expectation, it can lead to disappointment.
Those who truly love without material desires, without desiring something in return,
conquer the true affection of the people."

Chico Xavier
ABSTRACT


The objective of this research was to identify factors at an organizational level that influence international success in high-performance judo. To fulfil the objective of this research a Sequential Exploratory Design was used involving an initial phase which collects and analyses qualitative data, followed by a second intermediate phase related to the development of a measurement instrument and a third involving the collection and analysis of quantitative data. Through Content Analysis on interviews with 33 individuals (athletes, coaches, performance directors and experts) that act in the international high-performance judo, 11 categories and 44 subcategories were identified which were considered the dimensions and the organizational factors influencing the international sporting success in high-performance judo. It was verified that the results are similar to other studies and models, which had the purpose of investigating sport policies or high-performance sport systems, particularly the pillars of SPLISS model. However, specific judo characteristics that affect organizational factors that influence the international sporting success were identified, such as tradition, history and cultural aspects inherent of judo practice. Furthermore, based on the Systems Theory environmental factors that influence the development of judo in different countries and that consequently influence the reach of international success were also identified. From these results, the "Judo Organizational Factors Influencing the International Sporting Success" (JUDO-OFIISS) model was developed. A questionnaire developed and validated by Content Validation by six experts in the second phase allowed for model validation. In a third quantitative phase, it was proceeded an Exploratory Factor Analysis on data obtained in a sample of 406 individuals, divided into athletes, coaches, performance directors and experts from Brazilian high-performance judo context. The Exploratory Factor Analysis showed that the organizational factors influencing the international sporting success in high-performance judo were correlated and validated. The results in the third phase suggested that the search for international sporting success in high-performance judo
depends upon the existence of all identified organizational factors, probably on their relationship and the existing environment in different countries. Future research could deepen the understanding of the relationship between organizational factors by conducting quantitative procedures performed in samples from other countries, or by carrying out procedures involving confirmatory analysis or structural equation modelling in order to identify the importance or the “power” of each organizational factor or even the dimensions (categories) that were identified in this research. Specifically for judo, the identified results may provide knowledge into the development and management of high-performance judo and it can even be used as a model for the identification and evaluation of key factors in existing judo policies and systems. As to its theoretical contribution this research contributes to the understanding of sport policies and high-performance sport systems considering a sport specific level.

Key words: High-performance sport systems, sport policies, judo, international sporting success, mixed methods research.
RESUMO


O objetivo desta pesquisa foi identificar os fatores que influenciam o sucesso esportivo no judô internacional em um nível organizacional. Para atingir o objetivo desta pesquisa, foi utilizado o Modelo Sequencial Exploratório, do qual envolve uma fase inicial de coleta e análise de dados qualitativos, seguido por uma segunda fase intermediária relacionada com a construção de um instrumento e uma terceira fase de coleta e análise de dados quantitativos. Através da Análise de Conteúdo de entrevistas com 33 indivíduos (entre atletas, técnicos, gestores e experts) do judô de alto rendimento internacional, foram identificados na primeira fase qualitativa 11 categorias e 44 subcategorias, consideradas respectivamente como as dimensões e os fatores organizacionais que influenciam o sucesso esportivo internacional no judô de alto rendimento. Foi possível verificar que os resultados são semelhantes aos resultados de outras pesquisas e modelos que tiveram propósitos de investigar políticas esportivas ou sistemas esportivos de alto rendimento, principalmente aos pilares do modelo SPLISS. Entretanto, o judô possui especificidades que causam efeito sobre os fatores organizacionais que influenciam o sucesso esportivo internacional, como por exemplo, aspectos tradicionais, históricos e culturais inerentes à prática do judô. Além disso, a partir da Teoria de Sistemas, foi possível a identificação fatores ambientais que influenciam no desenvolvimento do judô em diferentes países e consequentemente no alcance do sucesso internacional. A partir destes resultados elaborou-se o modelo “Judo Organizational Factors Influencing the International Sporting Success” (JUDO-OFIISS). Com um questionário construído e validado por Validação de Conteúdo de seis experts na segunda fase. Na terceira fase foi possível a validação do modelo com uma abordagem quantitativa, onde procedeu-se Análise Fatorial Exploratória nos dados obtidos em uma amostra de 406 indivíduos, divididos em atletas, técnicos, gestores e experts do judô de alto rendimento brasileiro. Constatou-se através da Análise Fatorial Exploratória que os fatores organizacionais que influenciam o sucesso esportivo internacional no judô de alto rendimento se correlacionam e foram validados. Os resultados da terceira fase sugerem que a busca
pelo sucesso esportivo internacional no de judô de alto rendimento dependerá da existência de todos os fatores organizacionais identificados, provavelmente da inter-relação entre os mesmos e do ambiente existente em cada país. Futuras pesquisas podem aprofundar o entendimento sobre a relação dos fatores organizacionais realizando os procedimentos quantitativos em amostras de outros países ou realizando procedimentos que envolvam análises confirmatórias ou modelagem de equações estruturais, a fim de identificar a importância ou o “poder” de cada um dos fatores organizacionais, ou até mesmo das dimensões (categorias) identificadas nesta pesquisa. Especificamente para o judô, os resultados identificados podem proporcionar embasamento para o desenvolvimento e a gestão no judô de alto rendimento, ou ainda, podem servir como modelo para a identificação e avaliação de fatores chave nas políticas e sistemas de judô existentes. Quanto a sua contribuição teórica, essa pesquisa agrega no entendimento de políticas esportivas e sistemas de alto rendimento considerando uma abordagem que envolve um único esporte.

Palavra-chave: Sistemas esportivos de alto rendimento; políticas esportivas; judô, sucesso esportivo internacional; métodos mistos de pesquisa.
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1. INTRODUCTION
1. INTRODUCTION

International high-performance sports shows two major trends in recent years. First, an increasing number of countries are seeking success in major world sporting events; secondly, an increasing number of countries have developed the ability to win medals in an international context (Shibli, Bingham, & Henry, 2007; Shibli, De Bosscher, Van Bottenburg, & Westerbeek, 2013). Despite this increase in competitiveness, there are few winners and many losers in an international high-performance sport context. Though some nations are on the path to international sporting success, others are not (Digel, 2005).

In this context, researchers and managers have a great interest in analysing the existing sport policies in different countries, with the aim of finding explanations for why some countries achieve international sporting success while others do not. Several studies have been published over the past few years that aim to describe the organization of sport systems in different countries (Andersen & Ronglan, 2012a; Bergsgard, Houlihan, Mangset, Nodland, & Rommetvedt, 2007; Houlihan & Green, 2008); to analyse common characteristics in different national sport policies (Digel, 2002a, 2002b, 2005; Green & Houlihan, 2005; Green & Oakley, 2001); and to identify determinants of international sporting success (Brouwers, Sotiriadou, & De Bosscher, 2015; De Bosscher, Bingham, Shibli, Van Bottenburg, & De Knop, 2008; De Bosscher, De Knop, Van Bottenburg, & Shibli, 2006; De Bosscher, Shibli, Westerbeek, & Van Bottenburg, 2015; Madella, Bayle, & Tome, 2005; Sotiriadou, Gowthorp, & De Bosscher, 2013; Truyens, De Bosscher, Heyndels, & Westerbeek, 2014).

Though objectives and methodological approaches differ, most of these studies have analysed or compared sport "systems". Systems Theory defines "systems" as comprising interrelated elements that are integrated to reach common goals (Lyle, 1997). It is also considered that "systems" are influenced by the environment of which they are part (Certo, 2013; Chelladurai, 2009; Lyle, 1997; Maximiano, 2006). Thus, each country has a sport system in which the high-performance sport policies are implemented and the organizations involved have to manage the necessary elements for the achievement of common objectives that have been previously defined.

Recently, studies have further advanced the field of sport policies by studying certain aspects of high-performance sport policies and key success factors of specific
sports (Brouwers et al., 2015). Like the competitive advantage of nations in the economic context (Porter, 1980), most of nations cannot be competitive in everything, therefore many nations may specialise in one or more sports (De Bosscher, Shibil, et al., 2015). A small number of studies have analysed sport systems and success factors at a sport specific level in sprint canoe (Sotiriadou et al., 2013), athletics (Truyens et al., 2014), tennis (Brouwers et al., 2015), winter sports (A. C. Weber, Stopper, De Bosscher, & Kempf, 2014), among others. These studies have found specific sport characteristics that influence the development of sport at a specific level, as well as important factors that explain how some countries achieve international success in one sport.

In this regard, there is room for research that focuses on other specific high-performance sport systems and on their key success factors. In this case, Systems Theory can contribute to the perception of the systemic elements that influence sports development and the organizational factors of international sporting success (Chelladurai, 2009; Lyle, 1997; Slack & Parent, 2006).

This research focuses on judo. Judo can be considered a popular sport in the world and an important Olympic sport (Niehaus, 2006; Nunes, 2013; Peset et al., 2013). Since Barcelona 1992, 56¹ Olympic medals have been awarded in judo (one country cannot win more than 14 medals). By consequence, some countries consider judo to be a major investment target for their high-performance sport policies. In parallel, for these countries and their judo athletes, the dream is not only to compete in the Olympics but also to win the highest possible number of medals.

In 2009, the International Judo Federation (IJF) implemented a new world ranking system. Since then, to be qualified for the Olympic Games, athletes need to win points that result from their performance in a significant number of international events accredited by the IJF (Franchini & Julio, 2015; Lascau & Rosu, 2013). To attain a higher world ranking, judo athletes have their own multidisciplinary teams for their preparation and they receive support from governments, national federations, sponsors and other stakeholders (Franchini & Del’Vecchio, 2011; Julio, Panissa, Miarka, Takito, & Franchini, 2013; Krumer, 2014).

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¹ Based on the 2012 London Games, judo offers the fourth highest number of medals in the Olympics. The first is Track and Field with 146, followed by swimming with 102 medals and wrestling with 72 medals (British Broadcasting Corporation, 2012).
Thereby, the current context of international high-performance judo requires professionalism in the development of athletes and in the management of judo sport policies if international sporting success is the objective. On the other hand, there is not much research that addresses the organization and policies that are involved in the development of judo (Correia & Franchini, 2010; Franchini & Del’Vecchio, 2011; Gutiérrez-García, Pérez-Gutiérrez, & Calderón-Tuero, 2011; Peset et al., 2013).

Therefore, the objective of this research was to identify factors at an organizational level that influence the sporting success in international high-performance judo, based on the opinions of judo athletes, coaches, performance director and experts that act on an international level. Here, it can be understood that organizational factors, the factors present in a system, which can be managed by judo organizations of a country. The identified results may provide information for the development and management of high-performance judo and can even be used as a model for the identification and evaluation of key factors in judo policies and systems that may influence the achievement of international success.

To meet this research objective, a Sequential Exploratory Design according to Creswell and Plano Clark (2011) was used. The structure of this research is organized as follows: Chapter 2, the research Theoretical Background and a Contextualization of Judo. Chapter 3, Research Design. Chapters 4, 5 and 6, Description of each three Phases involving the Sequential Exploratory Design: Chapter 4, Phase 1 - Identification of the organizational factors influencing the international sporting success in high-performance judo; Chapter 5, Phase 2 – Questionnaire development; Chapter 6 Phase 3 – Generalization of the organizational factors influencing international sporting success in high-performance judo. Chapter 7, Final Considerations and Conclusions.
2. THEORETICAL BACKGROUND AND JUDO CONTEXTUALIZATION
2. THEORETICAL BACKGROUND AND JUDO CONTEXTUALIZATION

In order to build a theoretical background concepts of sport policies and Systems Theory are presented, followed by specific research about the organization of high-performance sport in different countries, as well as key manageable factors of international sporting success. The chapter will end with a contextualization of the world organization and characteristics of high-performance judo in an international context.

2.1 Sport policies and Systems

The term "sport policies" can refer to different situations or a set of specific actions related to the management of sport activities for a population (Bergsgard et al., 2007). Sport policies are also broad guidelines that a sport organization follows in pursuit of its objectives (Hums & MacLean, 2008). These definitions illustrate that sport policies exist in either government or private organizations and at different levels (e.g. national, state and local) for a varied public (e.g. youth, adults, athletes, seniors, etc.) and may have different goals. These goals can be to improve the population’s overall welfare, to use sports as an educational tool and to assist athletes to achieve sporting success at predetermined competitions (Houlihan & Green, 2008).

The assistance for athletes and the sporting success are directly connected to high-performance sport. High-performance sport can be defined as a sports practice that aims to achieve the highest performance levels and thus to obtain good individual and / or collective results (Meira, Bastos, & Böhme, 2012). By nature high-performance sport management seeks international success (De Bosscher, Shibil, et al., 2015).

In the current globalized context, international sporting success is considered a valuable tool to achieve the indirect goals set by government policies (Bergsgard et al., 2007; Houlihan & Green, 2008). In this context, different countries have specific high-performance systems as part of their national sport policies. Over the past ten years, different countries have increased their investments in effective high-performance sport policies in order to develop athletes who will represent the country in major international competitions, to enhance international success (Andersen & Ronglan, 2012a; De Bosscher, Shibil, et al., 2015; Digel, 2002a, 2005; Lyle, 1997; Sotiriadou,
and thus achieve broader goals, such as international prestige, national pride and an effective internal promotion of socioeconomic development (Bergsgard et al., 2007; Grix & Carmichael, 2012; Houlihan & Green, 2008).

The term “system” is used in various areas such as biology, social sciences, engineering, natural sciences, humanities, agriculture and health (Adams, 2015). The most used concept of systems comes from the Systems Theory. Systems Theory is often credited to the Austrian researcher and biologist Ludwig von Bertalanffy, although numerous researchers from different areas used this approach before him (Castellani, 2015).

Systems Theory defines systems as a whole, comprising of interrelated elements that are integrated to accomplish a clearly defined objective, or as a set of interrelated elements that work as a whole to achieve common goals (Lyle, 1997). According to this theory, the elements in a system can be divided into four groups: inputs/resources; processes or throughputs; results/outputs and environment (Figure 1).

As per Chelladurai (2009), inputs and resources vary and depend on the desired objectives to be achieved by the system. They are generally concerned with financial resources, material resources (for consumption, equipment, etc.) and human resources (practitioners, athletes, sport professionals, etc.). Processes are necessary actions to reach the products (results) desired by the system. Planning, organisation, control and evaluation are essential elements in any procedural development because through these, other actions can be implemented and resources can be leveraged.
Outputs (or results) represent how the processes were effective with respect to the resources used. The outputs in sport systems can be medals, the number of members, and the services provided among others.

Finally, the environment influences the other elements or parts of the system. The environment is related to the social, cultural, political and economic aspects existing in the context of a country or territory (Certo & Peter, 2005; Chelladurai, 2009; Hitt, Ireland, & Hoskisson, 2007; Slack & Parent, 2006; Thompson, Strickland, & Gamble, 2007; Wright, 2000).

In sport, or specifically in sport management, Systems Theory has been used in studies on the performance and effectiveness of sport organizations, and especially in studies on national sport organizations (Barros, 2003; Bayle & Madella, 2002; Bayle & Robinson, 2007; Chelladurai & Haggerty, 1991; Chelladurai, Szyszlo, & Haggerty, 1987; Madella et al., 2005; Papadimitriou & Taylor, 2000; Shilbury & Moore, 2006; Winand, Rihoux, Qualizza, & Zintz, 2011; Winand, Zintz, Bayle, & Robinson, 2010). For example, Madella et al. (2005) used a multiple-constituency approach (which was based on Systems Theory and will be detailed below) to elaborate on dimensions and indicators for the measurement of the organizational effectiveness of national sport organizations (national swimming federations) in four Mediterranean countries (Italy, Greece, Portugal, and Spain). The delineated dimensions consisted of various elements that in turn consisted of a number of indicators.

- Inputs Dimension
  
  (1) Human resources: number of athletes, coaches, managers; and sport participation,
  (2) Financial resources: total assets, distribution, and costs;

- Processes Dimension
  
  (3) Institutional communication, partners, and inter-organisational relationships: relationships, communication with International Federations, the National Olympic Committee, and others;

- Outputs Dimension
  
  (4) Volume (and quality) of services provided: actions, services for athletes, recreational activities, and sport education,
  (5) International sporting results: international performance;
• Environmental Dimension

(6) Socioeconomic and general data on sport: population, GDP, sport participation compared to the population and number of competition pools in the country.

To achieve international success some authors confirm the need for a high-performance sport system that integrates different elements and that aims to develop athletes with technical quality who achieve the best performance levels in major international competitions (Houlihan & Green, 2008; Röger, Rütten, Ziemainz, & Hill, 2010). The targeted results (goals approach, Chelladurai, 2009) of the national high-performance sport systems can be relative, because some nations aim to lead the medal count while for others the mere presence of athletes at major international sport events is already considered a significant result (Shibli et al., 2013). On the other hand, and as already mentioned above, the output in the high-performance sport systems are usually athletes and medals at major international events (De Bosscher, Shibil, et al., 2015; Green & Oakley, 2001; Houlihan & Green, 2008; Shibli, De Bosscher, Van Bottenburg, & Bingham, 2012).

Lyle (1997) showed the elements of a high-performance sport system with an interaction of the policy climate, national strategy and multi-agency delivery, as can be seen in Figure 2.
In spite of the contribution from Lyle (1997), some information presented in Figure 2 can be questioned. Talent identification and recruitment are part of the input, but traditionally these actions are considered to be a sport policies process (Bailey & Collins, 2015; Böhme, 2011; De Bosscher et al., 2006; Digel, 2002b; Vaeyens, Güllich, Warr, & Philippaerts, 2009). Furthermore, there is a lack of clarity on the relationship of high-performance sport systems with their environment.

Ferrand and McCarthy (2009) proposed a model of a sport system in strong relation to the environment, as well as with the sport systems and the interactions with other organizations, as it can be seen in Figure 3. These interactions are essential to make the systems achieve the desired results (Ferrand & McCarthy, 2009). By contrast, it is also unclear in this model what is considered as the inputs/resources; processes and results/outputs of the sport system.
De Bosscher et al. (2006) classified the factors that determine the international sporting success in three levels and to some extent contributed to the understanding of the environmental relationship of high-performance sport systems (Figure 4).
Figure 4: Levels that determine the international sporting success of a country (De Bosscher et al., 2006).

The macro-level factors is the social and cultural context of a country and involves other characteristics such as economic welfare, population, geographic and climatic variation, degree of urbanisation, political system ruling and cultural system. The meso-level factors comprise of the policies, including the sport policies that can influence the long-term sporting success of a country. The micro-level corresponds to the athlete’s individual characteristics (genetics), family context, friendship, coaches etc. Some micro-level factors can be controlled (such as sport training) whilst others cannot (genetic aspects).

De Bosscher et al. (2006) pointed out that these three levels interact continuously and neither of them can be completely isolated from the social and cultural contexts of the country. The authors also emphasized a grey zone between macro and the meso-level referred to as "environment of the sport system". This zone (indicated in Figure 4 through grey lines) is concerned with the role of the education system, the private sector, traditions and high-performance sport culture, media...
vehicles, among other characteristics which influence sport in a country. In this model, the relationship between high-performance sport systems and the environment can be understood more clearly. As seen below, De Bosscher et al. (2006) conducted a further analysis on meso-level factors because these can be influenced by policy.

A systematic approach can be useful here to understand high-performance sport systems in a country. Despite the lack of research on the histories, characteristics and capabilities of individuals who act in the system (Slack & Parent, 2006), Systems Theory provides a conceptual basis to identify manageable factors that influence international sporting success. In this case, the factors identified in accordance with the elements of a system inputs/resources, processes, outputs/results and the environment) can be considered organizational factors, as they can be managed by sport organizations that exist in a context (Chelladurai, 2009).

The next section is concerned with studies that describe sport policies, the high-performance sport systems of different countries’ and determinant factors of international sporting success.
2.2 Research on high-performance sport policies, high-performance sport systems and international sporting success factors

Since 1956, several studies have sought to explain sport performance achieved by countries in the international sporting events especially the Olympic Games (Johnson & Ali, 2004; Vagenas & Vlachokyriakou, 2012; Wu, Zhou, & Liang, 2010). Much of the published research uses socioeconomic variables (such as GDP, GDP per capita, population, etc.) to explain and even predict the results of countries in major international sporting events (Bernard & Busse, 2004; Hoffmann, Ging, & Ramasamy, 2004). Socioeconomic variables can explain approximately 50% of international sporting success (De Bosscher et al., 2006). Thus, the better the socioeconomic status of a country, the higher chance of success at the Olympic Games and / or in major international sport events.

On the other hand, high-performance sport in its international context has shown a greater number of countries investing in high-performance sport policies and in high-performance sport systems (De Bosscher, Shibil, et al., 2015). And as can also be verified an increase in the number of countries that win medals in an international sport context (Shibli et al., 2007, 2013).

These two facts or trends described above, suggest that countries are also looking for a better management in their sport policies that leverages the investments and result in a better international performances. Thus, there is a tendency that the effect of socioeconomic and contextual influence decreases and that the sport policies become more decisive in international sporting success (De Bosscher et al., 2006; De Bosscher, Shibil, et al., 2015; Digel, 2005). Without the influence of socioeconomic variables (such as GDP, GDP per capita, population, etc.) three types of research can be identified (De Bosscher et al., 2006). The first type focuses on the description of national sport policies and commonalities in the organization of high-performance sports in different countries (Andersen & Ronglan, 2012a; Bergsgard et al., 2007; Green & Houlihan, 2005; Houlihan & Green, 2008). The second seeks to define the necessary factors (that can be directly managed by sport policies) which lead to international sporting success (De Bosscher, Bingham, et al., 2008; De Bosscher, Shibil, et al., 2015; Digel, 2005; Green & Oakley, 2001). The third type identifies determinants of sporting success based on the athletes’ individual stories (Massa,
Uezu, & Böhme, 2010; Nunes, 2013; Syed, 2012). In this subchapter, only the first and second types of research were addressed, because this research focuses on the organizational factors that influence the international sporting success and which may be somehow manageable. The Appendix 1 shows a general overview of the research that was utilized in this theoretical background and also gives an analysis of the relation between this research and Systems Theory.

Green and Houlihan (2005) explored the development of three sports (swimming, track and field and sailing) in Canada, the United Kingdom and Australia, using secondary sources. Despite the contextual differences of the countries, the analysis shows similarities in four areas related to high-performance sports: (1) the existence of facilities for athlete development; (2) athletes with full dedication to training; (3) the development of coaches, sport science, sport medicine, (4) competitions and opportunities for athletes.

Bergsgard et al. (2007) also compared the sport policies of four countries using secondary sources: Canada, the United Kingdom, Germany and Norway. In their conclusions, it was stated that sports reflect not only global trends but also national traditions, cultural peculiarities and policies. However, according to the authors, the existence of rules in international sports contributes to the convergence of high-performance sport policies in different countries. National sport organizations must follow these rules if they want to compete in international events. This situation makes many countries take similar decisions in their strategies to achieve success in an international context. The focus on international competitiveness, the need for financial resources, the systematisation and professionalization of training, the development of centralized training locations and the use of scientific methods to improve performance are the main convergences found in the high-performance sport policies of the evaluated countries.

Houlihan and Green (2008) described the sport systems in nine countries: China, Japan, Singapore, Germany, France, Poland, Norway, New Zealand and the United States. According to the authors, it is possible to arrange the elements of sport systems into three distinct groups: (1) contextual, related to the availability of funding/wealth; (2) procedural, such as the talent identification system; and (3) specific, related to the organisation of training centres. In their conclusion, Houlihan and Green (2008) reflected on issues regarding sport policies such as the pressure on sport
systems to become more convergent and also on a set of concepts connected to "political learning", "lessons learned" and "benchmarking". They also pointed towards evidence of homogenization in the development of high-performance sports in most of the countries covered, but with subtle domestic variations. The authors state that an increased competition in international sports encourages countries to adopt a strategic approach to athlete development, with the goal of gaining a competitive advantage over “rivals”.

Andersen and Ronglan (2012a, 2012b) described the sport systems in the Nordic countries: Sweden, Finland, Norway, and Denmark. Although they confirm the global homogenization of the high-performance sport systems, the main finding of this study was that the countries followed different paths towards international sporting success depending on their context (environment). The influence of the environment is also highlighted by Arbena and LaFrance (2002), Bravo, Orejan, Vélez and López D'Amico (2012), Parent and Slack (2007) and Li, MacIntosh and Bravo (2012) as well.

Green and Oakley's (2001) research is considered seminal, as it specifically addresses the international success factors and involves high-performance sport policies directly (De Bosscher, Bingham, et al., 2008; De Bosscher et al., 2006; Green & Houlihan, 2005; Houlihan & Green, 2008). The authors compared the former Eastern Bloc countries (the German Democratic Republic and the Union of Soviet Socialist Republics) and Western Bloc countries (the United Kingdom, Spain, France, the United States, Canada, and Australia). They identified 10 items present in the high-performance sport policies of these countries, which could explain the international sporting performance:

1. A clear understanding of the role of the different agencies involved and effective communication in the sport system;
2. Administrative simplicity through common sport actions and policies;
3. An effective system to identify and monitor the progress of sporting talents and elite athletes;
4. The development of sport services that create a culture of excellence where athletes, coaches, managers, and sport researchers can interact formally and informally;
5. Well-structured competitive programmes with continuous international exposure;
6. Specific and well-developed facilities with priority access for elite athletes;
7. Investment that is focused on a small number of sports and on those that have real chances of success at global level;
8. Planning that covers the needs of each sport;
9. Budgeted costs for sporting excellence, with appropriate funding for infrastructure and human resources;
10. Appropriate support during the professional athletes careers and after ending their sporting careers.

With similar objectives to those of Green and Oakley (2001), the German researcher Helmut Digel conducted a research project called *Organisation of high-performance sport - a comparison of the most successful nations of sport in the Olympic Summer Games of Atlanta 1996* (Digel, 2002a, 2002b, 2005, 2013). The author analysed the high-performance sport systems of eight countries: Germany, Australia, China, the United States, France, the United Kingdom, Italy and Russia. The author identified the resources and structures that influence the achievement of international sporting success based on three levels:

(1) Society

Social values; political, economic and educational systems; the influence of mass media; demographic characteristics and population development; the quality of life; employment rates; equality and social justice.

(2) High-performance sport system

The organisational structure; coaches; athletes; training; talent identification and development; financial resources; sport facilities; the athletes and coaches' safety; the fight against doping; the competition system; priorities for some sports; interest and participation in sports; ideology and tradition in high-performance sports.

(3) Relationships with the High-performance sport system and the environment

The role of the institutions like government and policies; economy; mass media; education; science; the military system all in relation to sports.

In terms of methodological consistency, De Bosscher et al. (2006) proposed a model as part of the Sports Policy Factors Leading to International Sporting Success
The Nine Pillars model or the SPLISS model was the result of the joint efforts of an international consortium of researchers who developed a model that can be used to compare, measure, and evaluate different countries’ high-performance sport policies. Based on the existing literature and secondary sources on high-performance sport systems, in studies on the determinants of success at policy level and prerequisites for success according to athletes and coaches, the authors identified factors that lead to international sporting success. These factors were clustered in nine policy areas or pillars. The SPLISS model is illustrated in Figure 5.

Financial support, as reflected in Pillar 1 and an integrated approach to policy development (Pillar 2) are necessary conditions for the development of sport and athletic careers within a given sport. Pillars 3, 4 and 5 are a logical progression. The sequence starts when individuals are introduced to a certain sport (pillar 3) some of them will be subsequently identified as ‘talented’ and will receive special attention during the talent development phase (pillar 4) and a few of these talents finally reach international success.