

UNIVERSITY OF SÃO PAULO  
SCHOOL OF PHYSICAL EDUCATION AND SPORT

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

Leandro Carlos Mazzei

São Paulo  
2015

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Thesis submitted to the School of Physical Education and Sports, University of São Paulo, as a partial requirement for obtaining the title of Doctor of Science and submitted to the Faculty of Physical Education and Physiotherapy, Vrije Universiteit Brussel as a partial requirement for obtaining the title of Doctor in Physical Education and Movement Sciences

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*to Caroline and Lucas*

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How to synthesize all the acknowledgments to so many people in a few words? It is true that no man is an island and all efforts that I had to complete this work would not be possible without some form of help from many people.

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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

MAZZEI, Leandro Carlos. **Title:** High-performance Judo: organizational factors influencing the international sporting success. 2015, 149, f. Doctoral thesis for Doctor in Science. School of Physical Education and Sport, University of São Paulo, São Paulo, 2015.

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) from the international high-performance judo in the initial qualitative phase, 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; this 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 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

MAZZEI, Leandro Carlos. **Título:** Judô de alto rendimento: fatores organizacionais que influenciam o sucesso esportivo internacional. 2015, 149, f. Tese de Doutorado em Ciências. Escola de Educação Física e Esporte, Universidade de São Paulo, São Paulo, 2015.

O objetivo desta pesquisa foi identificar os fatores, que em um nível organizacional, influenciam o sucesso no judô internacional. 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 conseqüentemente no alcance do sucesso internacional. A partir destes resultados elaborou-se o modelo “Judo Organizational Factors Influencing the International Sporting Success” (JUDO-OFISS). Com um questionário construído e validado por Validação de Conteúdo de seis experts na segunda fase, foi possível a validação do modelo em uma terceira fase 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. 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

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 et al., 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 et al., 2007; HOULIHAN; GREEN, 2008); to analyse common characteristics in different national sport policies 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 et al., 2006, 2008a, 2015a; MADELLA; BAYLE; TOME, 2005; SOTIRIADOU; GOWTHORP; DE BOSSCHER, 2013; TRUYENS et al., 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; SOTIRIADOU; DE BOSSCHER, 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 et al., 2015a). A small number of studies have analysed sport systems and success factors at a sport specific level in sprint canoe (SOTIRIADOU; GOWTHORP; DE BOSSCHER, 2013), athletics (TRUYENS et al., 2014), tennis (BROUWERS; SOTIRIADOU; DE BOSSCHER, 2015), winter sports (WEBER et al., 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, 56<sup>1</sup> 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 et al., 2013; KRUMER, 2014).

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

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<sup>1</sup> 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).

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**

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 et al., 2015a).

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 et al., 2015a; DIGEL, 2002b, 2005; LYLE, 1997;

SOTIRIADOU, 2013) 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).

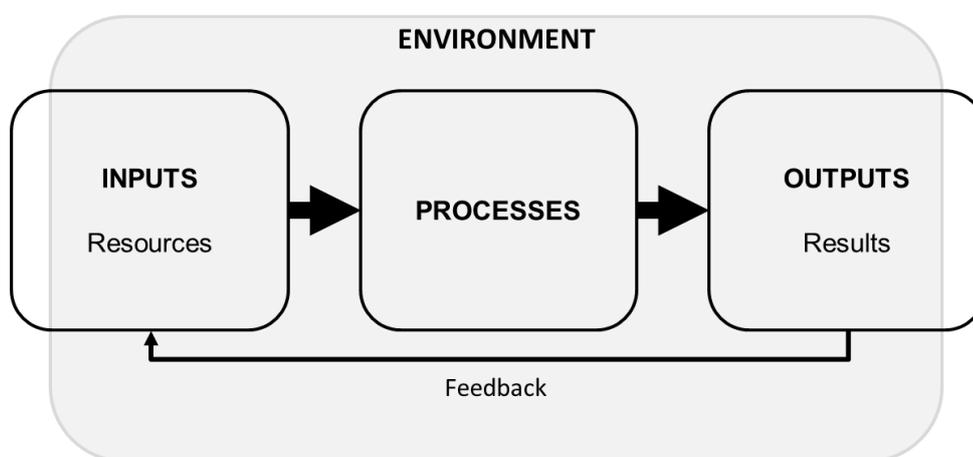


Figure 1: System conceptualization (CHELLADURAI, 2009).

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; BAYLE; TOME, 2005; PAPADIMITRIOU; TAYLOR, 2000; SHILBURY; MOORE, 2006; WINAND et al., 2010, 2011). 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 et al., 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 et al., 2015a; GREEN; OAKLEY, 2001; HOULIHAN; GREEN, 2008; SHIBLI et al., 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.

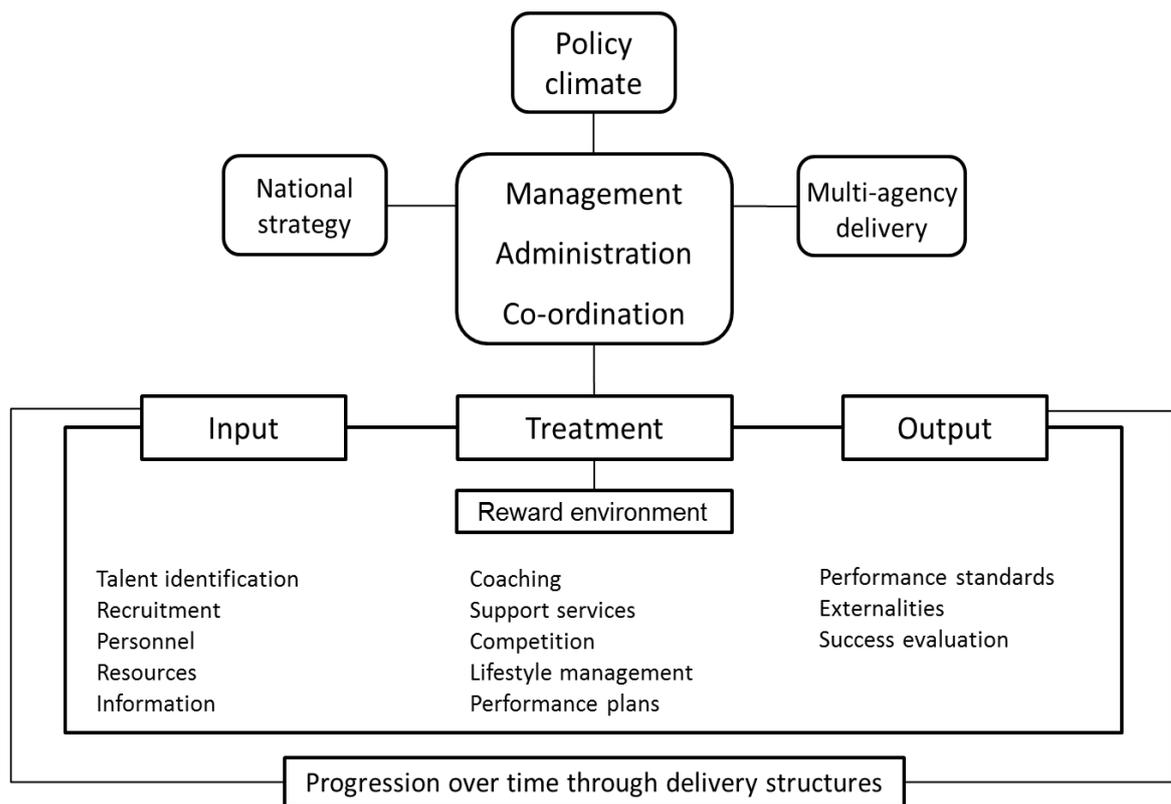


Figure 2: Elements and High-performance sport system (LYLE, 1997)

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, 2002a; VAEYENS et al., 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.

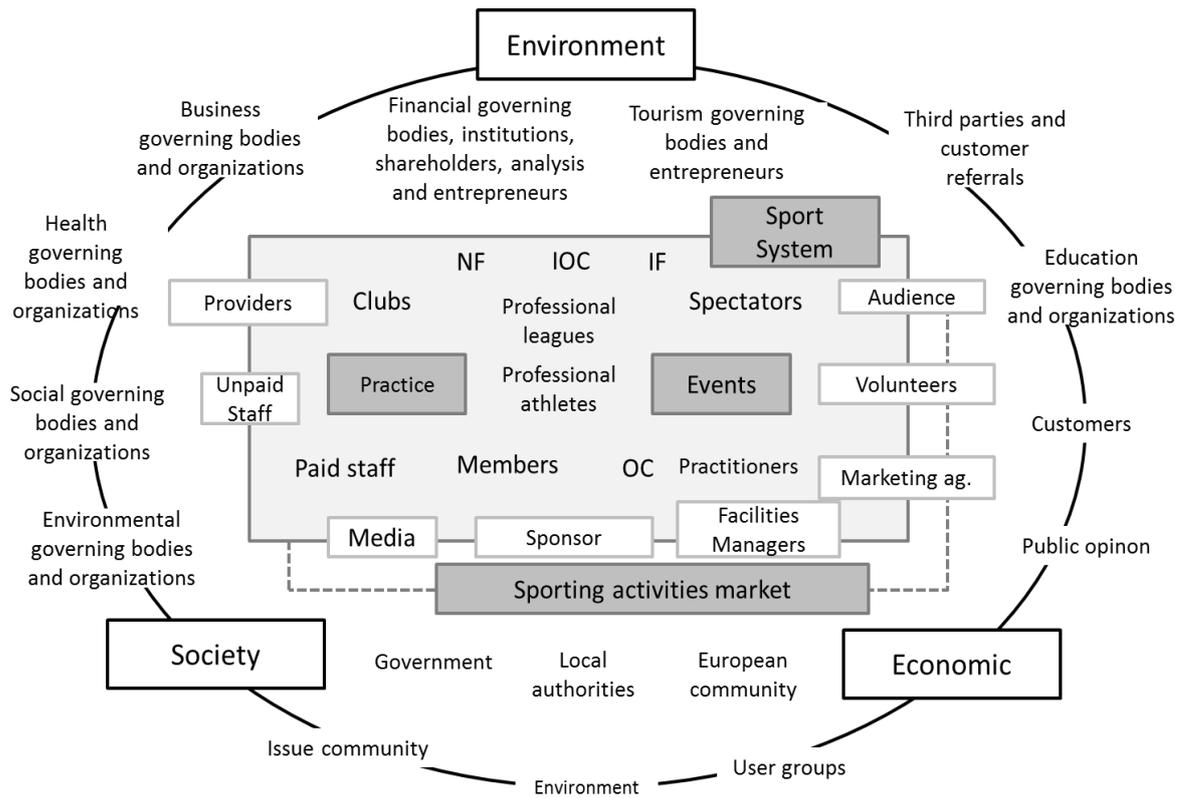


Figure 3: The Sports activities system (FERRAND; MCCARTHY, 2009).

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).

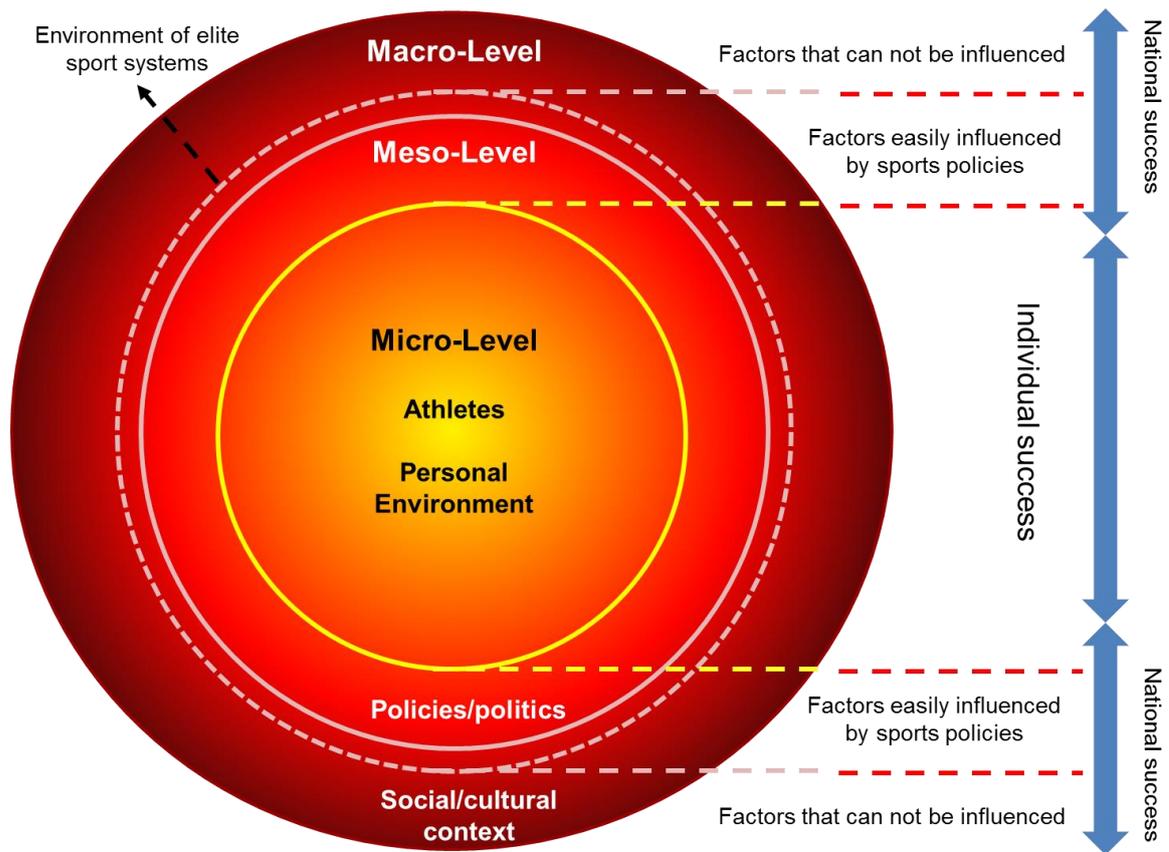


Figure 4: Levels that determine the international sporting success of a country (DE BOSSCHER et al., 2006).

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 et al., 2015a). And as can also be verified an increase in the number of countries that win medals in an international sport context (SHIBLI; BINGHAM; HENRY, 2007; SHIBLI et al., 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, 2015a; 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 et al., 2008a, 2015a; 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 et al., 2006, 2008a; 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 (SPLISS) consortium. 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, a few 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.

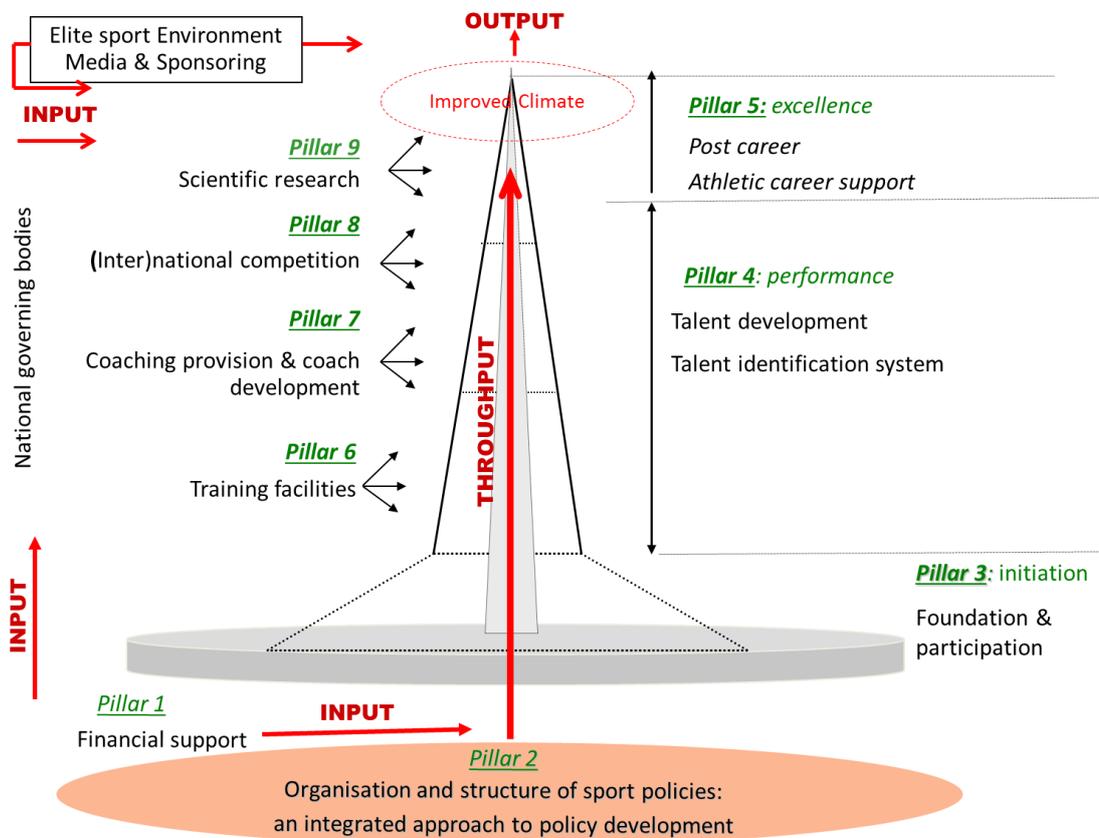


Figure 5: The nine pillars of sports policy factors influencing international success (DE BOSSCHER et al., 2006).

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 the top and start to perform at an international level (pillar 5). Investments in four other

pillars are essential to the development of athletes: training facilities (pillar 6), the provision and development of coaches (pillar 7), national and international competition structures (pillar 8), and scientific research and sports medicine support (pillar 9) (DE BOSSCHER et al., 2006).

Each pillar is composed of Critical Success Factors (CSFs). “CSFs” is the term for a crucial element that provides an organization or system with a greater chance of success. They total 96 in the SPLISS model and can be seen in more detail in some references (DE BOSSCHER et al., 2008a, 2009, 2015a).

The first application of the SPLISS model was used to compare the sport policies of six countries (Belgium, Canada, the Netherlands, Italy, Norway, and the United Kingdom). The results of the first version of the project were published in 2008 (DE BOSSCHER et al., 2008a). After this publication, the model began to be discussed frequently in international events, such as those of the European Association for Sport Management and the European College of Sport Science. In 2009, SPLISS 2.0 was launched with the aim to compare the sport policies of 15 countries: Australia, Belgium, Brazil, Canada, South Korea, Denmark, Estonia, Finland, France, Netherlands, Northern Ireland, Japan, Portugal and Switzerland. The results of the second application of the SPLISS model were disseminated in scientific meetings and fully published in 2015 (DE BOSSCHER et al., 2015a).

Unlike other studies, SPLISS is not only an empirical or conceptual model. It has been used to compare high-performance sport policies, providing an interesting understanding of the strengths and weaknesses of the sport systems of different countries. Its methodological procedures are clear, as seen in De Bosscher et al. (2010), which allows for future replications of the study.

As previously explained, the SPLISS model used similar concepts of Systems Theory. Figure 5 identifies the input (even if only financial resources are considered), processes (Pillars 2 to 9), output and environmental factors, such as the media and sponsors. However, as noted by the authors of the SPLISS model, there is room for further research on this topic, including on the use of multivariate statistical analyses to validate the nine pillars and their international sporting success factors (DE BOSSCHER et al., 2010).

Recently, a few studies emerged involving the SPLISS model and the high-performance policies of one single sport. For example, Sotiriadou et al. (2013)

interviewed athletes, coaches and high-performance directors from sprint canoe in Australia. The findings showed that, besides the procedural pillars of SPLISS model (Pillar 2 to Pillar 9) there are characteristics relating to the specificity of the sport and to the context of the country. These include the culture or the lifestyle of the sprint canoe in an Australian context, the role of coaches in understanding the existing culture to develop athletes and the transition from surf athletics.

Truyens et al. (2014) conducted a study in athletics based on the SPLISS model. The authors identified 98 items that were clustered as organizational resources and first order capabilities. These organizational resources and first order capabilities contribute to nations' competitive advantage in athletics. However, the authors also pointed out that each country must seek its own solution for the development of athletics, as high-performance athletics systems are influenced by the existing cultural context of a country.

In tennis, Brouwers et al. (2015) also used the SPLISS model to analyse the important international success factors in the sport. His results confirmed the significance of the nine pillars in tennis. Nevertheless, two contextual themes emerged that help to explain the context in which tennis operates; these being the specific cultural aspects and the influence of the commercial environment that is present in tennis.

The main contribution of the research within specific sports was the influence of the sport's specific characteristics in organizing high-performance sport policies and systems. At the same time, they opened paths to conducting research in other sports, like in judo for example. In this sense, it will be possible to verify other sport specificities that influence high-performance systems and compare the results found in studies that had sport policies and international sporting success factors in their objectives.

### 2.3 Contextualization of international high-performance Judo

An understanding of high performance judo can be attained through a brief history of the sport. The history of judo has two distinct historical periods (FRANCHINI; DEL'VECCHIO, 2007; MATSUMOTO; BROUSSE, 2005; NAKAJIMA; THOMPSON, 2012; NIEHAUS, 2006; VILLAMÓN; BROUSSE, 1999; WATSON, 2008). The first period started in 1882 until the 1950s and refers to the establishment and spread of Kodokan Judo as a cultural, physical and mental practice with educational and philosophical goals based on the guidance of its founder, Jigoro Kano. The second period began after the end of World War II and continues up until the present day. The second period began after the end of World War II and continues up until the present day. Previously, judo was essentially seen as a Japanese cultural practice, but after the 1950s, judo went through a transformative process (sportivization or sportification) and became a globally recognised combat sport (NIEHAUS, 2006; SATO, 2013).

The reason behind the worldwide spread and the future of judo as a global high-performance sport was its inclusion in the Olympic Games. Judo athletes competed in the Olympic Games for the first time in Tokyo in 1964 and helped consolidate its position as an official sport in the 1972 Munich Games (INTERNATIONAL OLYMPIC COMMITTEE, 2011). With the Olympic seal, the practice of judo has encouraged individuals of different nationalities to dream of participating in the largest sporting event of the modern era (NIEHAUS, 2006; NUNES, 2013).

The 'sportivization' of judo has stimulated discussion on the philosophical tradition and sporting aspirations. Debates on its original principles, as idealised by Jigoro Kano, and the increased quest for sporting results are common in Judo. This has created a paradox between tradition and modernity, a fact that is also reflected in the dynamics of Judo sport organizations (FRANCHINI; DEL'VECCHIO, 2007; SAEKI, 1994; VILLAMÓN et al., 2004).

As suggested by Chappelet and Kübler-Mabbott (2008), most Olympic sports have an international system where the main objective is to promote, develop and organize a specific sport at a global level, and the main actions of this system involve the organization of competitions at different levels (Olympic, global, continental, national, etc.). In judo, this system started to be formed in the 1950s (second historical period) and was created by the leaders of European associations. There were several

conferences in Europe on conducting the Olympic Games in the post-war period. European Judo Associations took advantage of the context and mobilized to establish international organizations and rules in competitions, with the purpose of making judo an Olympic sport (BROUSSE; MATSUMOTO, 1999; NIEHAUS, 2006; SATO, 2013). The European Judo Union (EJU) and the International Judo Federation (IJF) were created in 1948 and 1951 respectively and other international organizations were created later on (BROUSSE; MATSUMOTO, 1999; NIEHAUS, 2006; VILLAMÓN; BROUSSE, 1999). Since then, the system of international judo evolved and gradually covering most of the countries in the world. Based on information from the website of the International Judo Federation (INTERNATIONAL JUDO FEDERATION, 2015a), the current international judo system may be presented as shown in Figure 6.

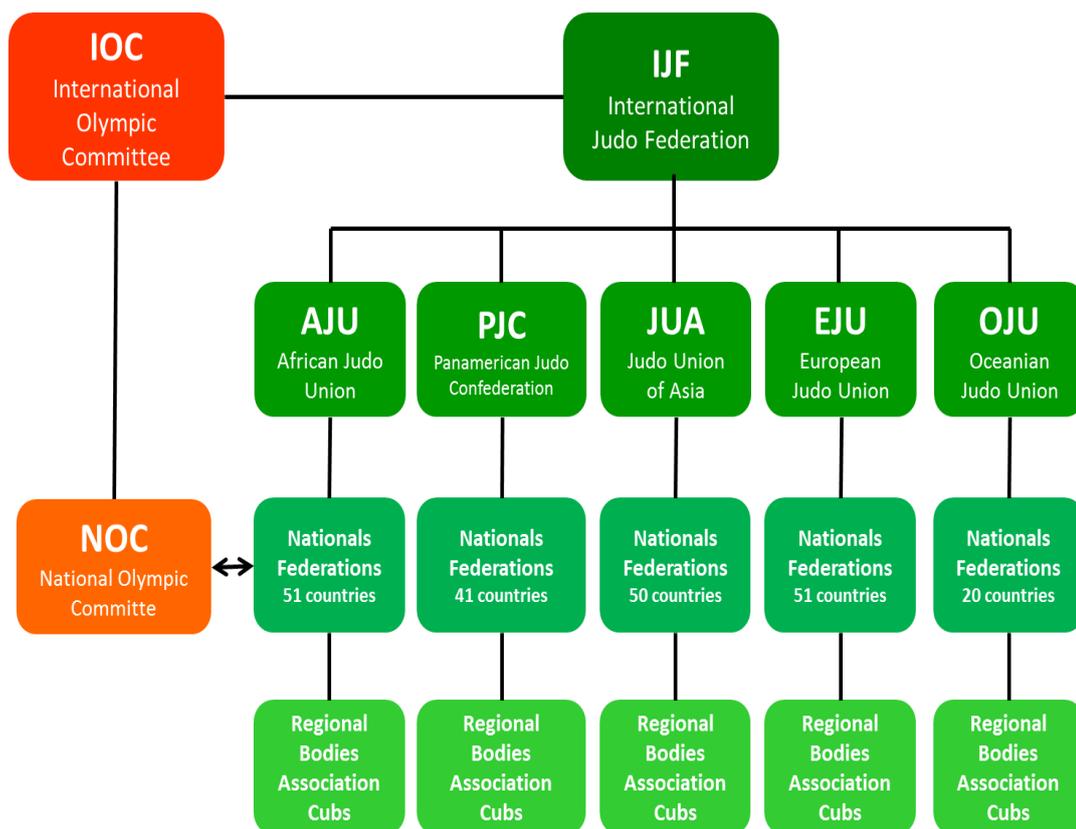


Figure 6: International System of Judo, elaborated by author from the IJF information (INTERNATIONAL JUDO FEDERATION, 2015a).

In this worldwide judo organization, each country has a National Judo Organization. Depending on country or continent, these coordinating bodies are the National Governing Bodies in Judo, also called National Sporting Organizations (in

Australia) and National Sport Federations (in mainly European countries and in America) (MADELLA; BAYLE; TOME, 2005; MAZZEI et al., 2012; PAPPOUS; HAYDAY, 2015; SHILBURY; MOORE, 2006; WINAND et al., 2011).

These national organizations aim to manage judo activities, organise competitions and send elite athletes to compete in major international judo events (CHAPPELET; KÜBLER-MABBOTT, 2008; HUMS; MACLEAN, 2008). In some countries, there is government support for these actions, whereas in others, national judo organizations must seek funds from private organizations or from their members. Furthermore, national sport organisations are recognized as authorities that promote, develop, and organize one sport in the country (MADELLA; BAYLE; TOME, 2005; ROBINSON; MINIKIN, 2011). Therefore, these organizations experience constant pressure to meet the expectations of the different stakeholders in their environment. Amara et al. (2005), Houlihan and Green (2009) and Robinson and Minikin (2011) suggest that these characteristics end up causing an overload of responsibilities for the national sport organizations.

Following these characteristics, according to Chelladurai (2009), these organizations create as “associations”, which generates a paradox. This is because in most cases they need to meet the expectations of their stakeholders, but their leaders are in fact volunteers. However, as in any other segment, national sport organizations need resources to invest and to develop processes to achieve the desired results.

In the scientific literature, there are not many studies that have addressed the organization or the management of national judo organizations. Saeki (1994) analyses the conflict between tradition and the movement towards modernization in the structural reforms that occurred in the 1980s in the All Japan Judo Federation. The author concluded that, the sport organizations are under increasing social pressure to produce high-performance standards, even in a sport so fully marked by tradition as judo. As a result, the necessity exists to modernize and develop new management practices. Villamón et al. (2004) analyzed the impact of modernity on the original philosophical principles of judo. Mazzei (2006) and Mazzei and Nassif (2013) also addressed the issue of organizational culture in a judo organization, where the specificity of the sport influences the routines and actions are taken at managerial level. Mazzei, Vieira, et al. (2012) described actions in the management and sportive scope

of the Brazilian Judo Federation from 2001 to 2011 that determined organizational improvement as compared to the past management of this organization.

In a study related to the development of sport talent, Silva Filho (2014) aims to determine the structure and quality of development programmes for high-performance judo athletes in the state of São Paulo; with an emphasis on the detection, selection and promotion processes for sport talent. The authors concluded that there is no talent development system for young judokas in São Paulo and that the athletes are trained by specific initiatives typically organized by clubs. Pappous and Hayday (2015) aimed to investigate the London 2012 impact on judo participation in England. Their results showed the importance of the distribution of resources and communication among clubs and federations for the better development of judo in the country.

Research that aims to identify success factors from the perspectives of the athletes is common in judo research. For example, Massa, Uezu and Böhme (2010) interviewed six Brazilian Olympic judo athletes and identified the following key determinants for success: a) family support; b) the enjoyment of practise; and c) the judoka's determination. Nunes (2013) developed "a judo family tree" of Brazilian judokas who were Olympic medallists, showing that success is related to the technical work of coaches who were successful in the past. Franchini and Takito (2014) describe the training routines used by 61 Brazilian Olympic judo athletes. The authors found that these athletes began competing at the age of 10 and reached Olympic level after the age of 14. In the last six months before the Olympic Games, these athletes trained six out of seven days and twice daily, totalling 24 hours per week. In the training routine there are fight simulations, dynamic and static technique practices, and strength and aerobic training. Athletes also reported that all activities performed during the training are relevant, requiring high levels of effort and concentration; but, nevertheless, these activities are simultaneously classified as pleasant. Other studies have addressed the psychological factors of high-performance judo athletes (FRANCHINI et al., 2011); the most common and efficient techniques in the Olympics (STERKOWICZ; SACRIPANTI; STERKOWICZ-PRZYBYCIEN, 2013); combat standards in international events (MIARKA et al., 2015); and other topics.

All cited references suggest that research that is specifically on policies and high-performance systems in judo are scarce. Some literature reviews regarding state-of-the-art of judo confirmed this fact. Gutiérrez-García et al. (2011) conducted a

bibliometric analysis of combat sports between 2000 and 2009 using the Web of Science as a database. From a total of 148 articles identified, the topics that stood out were related to sport sciences (42.11%), followed by orthopaedics (6.75%), general and internal medicine (5.83%) and integrative/complementary medicine (5.50%). Another 106 areas had less than 10 articles and were not described in detail by the authors in the study. Peset et al. (2013) published research on the scientific articles that had judo as the main topic. The authors also used the Web of Science as a database; identifying 383 articles between 1950 and 2010, out of these just six articles were related to economics, management, anthropology and social sciences. In summary, there is a small number of studies that aim to analyse the management of national judo organizations and consequently, the sport policies in judo.

### 2.3.1 The increasing competition in the international high-performance judo

Using the Olympic Games as a parameter, since this is the main judo competition (JULIO et al., 2013; NIEHAUS, 2006), it is possible to observe an increase in competition in international high-performance judo. In Table 1, the evolution of the number of athletes can be observed, as well as the number of countries with successful results in Olympic judo competitions.

Table 1: Evolution of Judo numbers in the Olympics, elaborated by the author from Infostrada Sport database (INFOSTRADA SPORTS GROUP B.V., 2013).

Summer Olympic Games	Number of Medals (Judo)		Number of Athletes		Number of Countries		Countries with athletes the top 8		Countries with medallists athletes	
1964	16	-	72	-	27	-	19	-	9	-
1968	-	-	-	-	-	-	-	-	-	-
1972	24	33.3%	152	52.6%	46	41.3%	21	9.5%	11	18.2%
1976	24	0.0%	140	-8.6%	47	2.1%	24	12.5%	13	15.4%
1980	32	25.0%	184	23.9%	42	-11.9%	24	0.0%	15	13.3%
1984	32	0.0%	212	13.2%	61	31.1%	22	-9.1%	13	-15.4%
1988	28	-14.3%	243	12.8%	70	12.9%	26	15.4%	13	0.0%
1992	56	50.0%	433	43.9%	94	25.5%	28	7.1%	19	31.6%
1996	56	0.0%	385	-12.5%	92	-2.2%	32	12.5%	17	-11.8%
2000	56	0.0%	398	3.3%	90	-2.2%	34	5.9%	25	32.0%
2004	56	0.0%	386	-3.1%	94	4.3%	40	15.0%	24	-4.2%
2008	56	0.0%	386	0.0%	92	-2.2%	39	-2.6%	25	4.0%
2012	56	0.0%	385	-0.3%	132	30.3%	38	-2.6%	23	-8.7%

Despite the variations presented in some of the Olympic Games, there were no great changes in the number of countries that have athletes in the top eight, or in the number of countries that had athletes with medals, especially after the Olympic Games of Sydney 2000. The increase in the number of athletes and countries after the 1992 Olympic Games can be explained by the inclusion of female athletes in Olympic competitions and by the dissolution of several nations at the end of the Cold War. Similar findings were reported regarding sports in general (DE BOSSCHER et al., 2008b; SHIBLI; BINGHAM; HENRY, 2007).

The performance of countries in the Judo Olympic competitions shows a slightly different perspective when analyzed through a ranking system, which weighs medals and other final results (CONDON; GOLDEN; WASIL, 1999; DE BOSSCHER et al., 2008b; SHIBLI; BINGHAM; HENRY, 2007; SHIBLI et al., 2013). The world ranking of the International Judo Federation (IJF) (as it will be verified), assigns 10 points to the gold medals, 6 points to the silver medals, 4 points to the bronze medals<sup>2</sup>, 2 points to fifth place and 1.6 points to seventh place (INTERNATIONAL JUDO FEDERATION, 2013). Accordingly, the performance of the 10 best countries in judo competitions in the last six Olympic Games (1992-2012) are show in Figure 7.

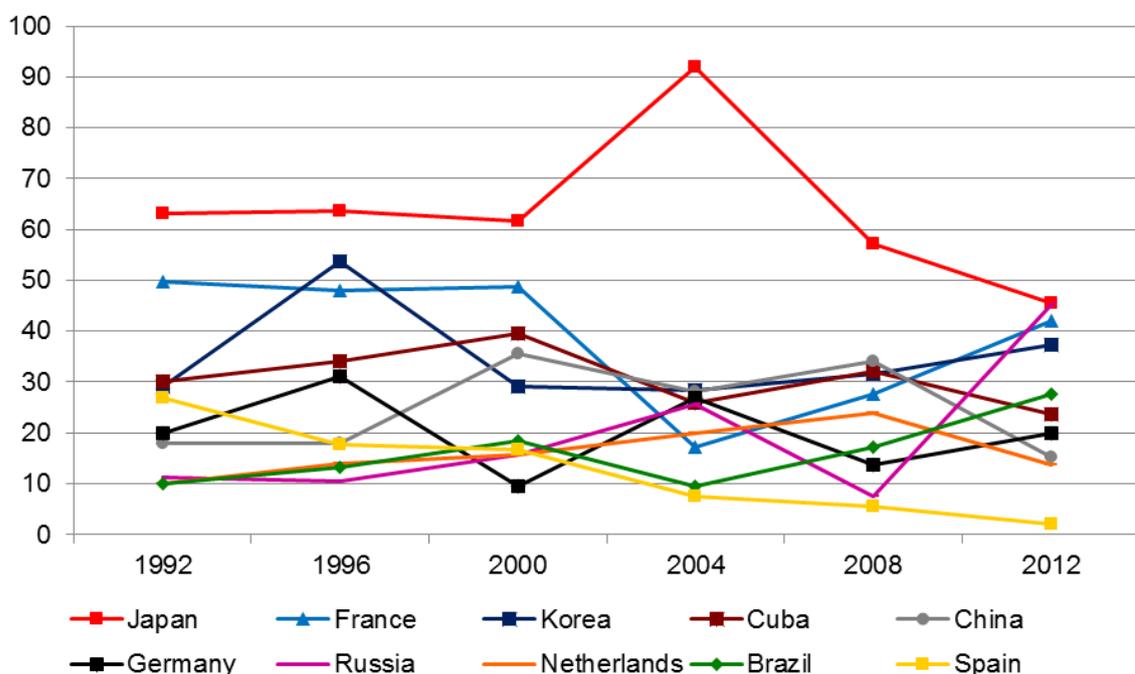


Figure 7: Performance of countries in Judo competitions at the Olympic Games from 1992 to 2012, elaborated by the author.

<sup>2</sup> In Judo competitions, two athletes win 3<sup>rd</sup> place due to the competition system used (elimination with double repechage).

Since 2004 a closer result can be observed among the 10 leading countries. Moreover, other countries, who used to be outperformed by Japan, closed this gap in London in 2012. This phenomenon, in which the performance becomes more balanced, is the result of increased competition among the top 10 countries. More nations compete and invest strategically in high-performance sport (DE BOSSCHER et al., 2008a). This is also probably the case regarding the performance of other countries in judo. Though not indicated in figure 7, Georgia, Mongolia and Azerbaijan, for instance, began to win more medals in Olympic Judo competitions and can confirm this tendency. After all, Judo offers 56 Olympic medals, which makes this sport one of the main targets of investment policies in different countries (even each country only holds a maximum of 14 Olympic medals in judo).

In 2009, the IJF implemented the world ranking system, in which judo athletes must win points of a significant number of international events accredited by the IJF to qualify for the Olympics (FRANCHINI; JULIO, 2015; LASCAU; ROSU, 2013). Throughout the four years between each Olympics, athletes take part in World Cups, Continental Championships, Grand Prix, Grand Slams, World Masters and World Championships. The results of the latest Olympic Games are also included in the score (INTERNATIONAL JUDO FEDERATION, 2013). Figure 8 shows the points awarded by the world ranking system from IJF.

	CONT. OPEN	GRAN PRIX	Continental	GRAND SLAM	MASTERS	WORLD CH.	OLYMPIC GAMES
1st place	100	300	400	500	700	900	1000
2nd place	60	180	240	300	420	540	600
3rd place	40	120	160	200	280	360	400
5th place	20	60	80	100	140	180	200
7th place	16	48	64	80	112	144	160
1/16th	12	36	48	60		108	120
1/32nd	8	24	32	40		72	80
1 fight won	4	12	16	20	28	36	40
participation		2	2	2		4	

Figure 8: Events and points in the world ranking of the IJF (INTERNATIONAL JUDO FEDERATION, 2013).

For a better performance in the world ranking, governments, national federations, sponsors and other stakeholders increasingly invest in the development of judo and the preparation of athletes. For example, the budget and operating expenses of the Brazilian Judo Confederation from 2009 to 2012 increased 41% between 2009 and 2011 (Table 2).

Table 2: Revenues and operating costs with high-performance sport of Brazilian Judo Confederation (elaborated by the author, data from CONFEDERAÇÃO BRASILEIRA DE JUDÔ, 2011, 2013).

Year	Revenues	Operating costs	Change between years %
2009	R\$13.087.711,00 € 4.843.174,70	R\$9.295.754,00 € 3.439.941,53	
2010	R\$16.482.450,00 € 6.099.415,31	R\$15.312.139,00 € 5.666.335,71	39,3%
2011	R\$36.599.843,00 € 13.543.959,96	R\$25.974.468,00 € 9.611.985,35	41,0%
2012	R\$28.509.392,00 € 10.550.047,00	R\$21.372.588,00 € 7.909.036,01	-21,5%

Note: Amounts in Euro from the 31/12/2012: € 1 equals R \$ 2.7023.

In 2012, the resource demand and spending were lower, probably due to the announcement of qualified athletes for London Olympic Games in May 2012. On the other hand, the values presented in Table 2 demonstrate how much national organization invest in their pursuit of success in international judo.

In short, the context presented in this subchapter shows that there are a few numbers of research related to policies and judo high-performance systems and an increase in the “competitiveness” in international high-performance judo. According to Sotiriadou (2013), the existence of different variables is essential to the proper organization of high-performance sport, including the availability and management of financial resources, training, the development of sport sciences, talent identification, opportunities for athletes, equipment, training facilities and competitions. This perspective requires that sport policies have a management structure and take into account not only the simple existence of these variables, but also the synergy of the variables needed for the development of high-performance sport.

The knowledge about the organizational factors influencing the sporting success in international high-performance judo can contribute to the development of more

effective judo sports policies, therefore, the results of this research will contribute to the improvement of judo development in different countries. In addition, it intends to contribute to the knowledge of sports policy and high-performance sport systems by analyzing organizational factors influencing international sporting success in a single sport.

### 3. RESEARCH DESIGN

This research used a Sequential Exploratory Design following to Creswell and Plano Clark (2011). This is a mixed-method research design and is based on the premise that exploration is necessary for several reasons, including the fact that the variables of a problem are not known or detailed in advance. Research that use mixed-methods are still scarce in the areas of sport management and sport policies, but their use has been increasing in sports management research (ANDREW; PEDERSEN; MCEVOY, 2011; LI; PITTS; QUARTERMAN, 2008; SKINNER; EDWARDS; CORBETT, 2015; VEAL; DARCY, 2014). The main advantages of mixed-methods research are the balance and synergy in the use of qualitative and quantitative approaches in order to better understand a particular phenomenon and obtain greater consistency in the research results (SKINNER; EDWARDS; CORBETT, 2015).

The Sequential Exploratory Design has three phases, as shown in Figure 9. An initial phase consists of collecting and analyzing qualitative data (Phase 1). This is followed by a second intermediate phase related to the construction and validation of an instrument to quantitatively measure the results from the qualitative first phase (Phase 2). In addition, a third phase involves the collection and analysis of quantitative data, obtained through the instrument developed in the second phase (Phase 3). From a philosophical perspective, the qualitative phase is based on constructivist principles because the search for identification results from processes and analyzes that involve a deeper understanding of the research problem. The quantitative phase conforms to a post positivist approach, as it involves procedures for identifying and measuring variables and statistical trends (CRESWELL; PLANO CLARK, 2011).

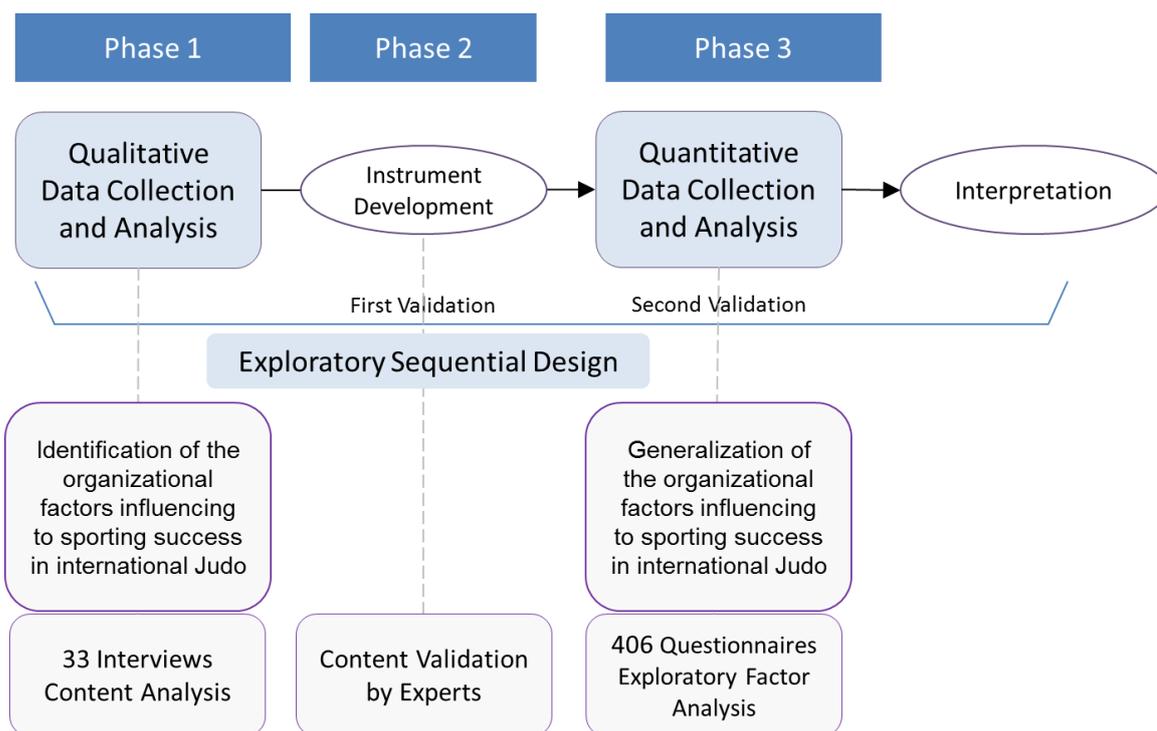


Figure 9: Sequential Exploratory Design based on Creswell and Plano Clark (2011)

In this research project, a first qualitative phase involved the identification of the organizational factors influencing the international sporting success in high-performance judo through semi-structured interviews with 33 key stakeholders in judo worldwide (athletes, coaches, national performance directors and experts) from 11 countries, who performed significantly during the last six Olympic Games. The analysis was done through Content Analysis. The Krippendorff's alpha coefficient ( $\alpha$ ) was used for the reliability of the qualitative results in this first phase (KRIPPENDORFF, 2013).

In a second intermediate phase an instrument (questionnaire) was developed that enabled the validation of the results identified in the qualitative first phase. Six experts in judo were interviewed for the Content Validation on the semantic / adequacy and relevance / importance of the items identified in Phase 1. During this second phase the Coefficient of Content Validity (CCV) was used to analyse the six experts' evaluation (HERNÁNDEZ-NIETO, 2002).

In a third quantitative phase, the organizational factors influencing the international sporting success in high-performance judo identified in Phase 1 and used in Phase 2, were validated through their generalization into a larger sample of 406

Brazilian judo athletes, coaches, performance directors and experts. An Exploratory Factor Analysis (EFA) was conducted to verify the items' validity and the Cronbach's alpha index was used for the reliability of the quantitative results in this third phase.

Further details of each phase will be presented in the next chapters. All procedures performed in this research were approved by the Research Ethics Committee of the School of Physical Education and Sport at the University of São Paulo (Universidade de São Paulo), under the Certificate of Ethical Appreciation (Certificado de Apresentação para Apreciação Ética - CAAE) number 19531114.7.0000.5391 (Appendix 2).

#### **4. PHASE 1: Identification of the organizational factors influencing the international sporting success in high-performance judo**

Phase 1 aimed to identify the organizational factors influencing the international sporting success in high-performance judo. To accomplish this purpose, semi-structured interviews with key stakeholders in international high-performance judo were realized. Interviews with stakeholders conform to the multiple-constituency approach, which is the analysis of the opinions of different individuals and groups (constituents/stakeholders) involved or interested in the system performance. This approach contributes to the validation of the found results (CHELLADURAI, 1987, 2009; CONNOLLY; CONLON; DEUTSCH, 1980; DE BOSSCHER et al., 2010; MADELLA; BAYLE; TOME, 2005; ZAMMUTO, 1984).

The interviews were analyzed using Content Analysis. Content Analysis is considered an advantageous method for the identification and in-depth analysis of information regarding social realities which would not be possible through quantitative methods (BARDIN, 2011; KRIPPENDORFF, 2013). The analysis and the identification of the organizational factors influencing success in high-performance judo had a deductive-inductive approach, from two theoretical approaches: Systems Theory (CHELLADURAI, 2009) and the SPLISS model (DE BOSSCHER et al., 2006).

##### **4.1 Methodological Procedures**

The methodological procedures in this phase involve a qualitative approach, which provides in-depth research on a specific research topic (Creswell & Plano Clark, 2011; Skinner et al., 2015); and involves a multiple-constituency approach, which is the analysis of data from different origins and especially from different constituents that are relevant to the object of study (ANDREW; PEDERSEN; MCEVOY, 2011; CHELLADURAI, 2009; DE BOSSCHER et al., 2010; MADELLA; BAYLE; TOME, 2005). In this vein, interviews were conducted with key stakeholders from different countries (which will be informed following) that act in international judo and were subsequently analyzed using Content Analysis.

#### 4.1.1 Instrument

To identify the organizational success factors influencing the sporting success in international judo, semi-structured interviews were conducted. Semi-structured interviews should be composed of a number of key themes for the formulation of questions and should allow probing and the formulation of new questions related to topics of the problem (LI; PITTS; QUARTERMAN, 2008). As a reminder, the conceptual framework that was taken as a starting point of this study consists of two approaches: Systems Theory, which considers the influence of interactions between input-process-output-environment in the international sporting success of countries (CHELLADURAI, 2009) and the SPLISS model, that proposes sports policy factors leading to the international sporting success of countries (DE BOSSCHER et al., 2006). The key themes for the questions are shown in Table 3.

Table 3: Key themes and issues guide for the Semi-structured interview used in Phase 1.

Key themes	Questions and / or subject to new questions
Inputs (resources)	1. What is important / needed (in organizational terms) to win medals in major international JUDO competitions? (quote Olympics)
Inputs (resources) and Processes	2. What does your country / organization do (according to resources and processes) to win medals in major international JUDO competitions? In relation to the nine Pillars of the SPLISS model?
Processes	3. What are the factors determining the international sporting success in JUDO (in organizational terms)? And which ones are the most important?
Processes and Environment	4. Regarding the international JUDO performance of your country, what are the positive characteristics in your country/organization that explain the performance? And what are the negative ones?
Processes and Environment	5. What does your Country have/don't have for a better performance (win medals in major international JUDO competition) if you compare to other countries?
Environment	6. What difficulties does your country / organization have in order to perform better in an international JUDO context? (in terms of environment / country).

Despite the established interview structure, new questions could be added provided that they are relevant to the purpose of Phase 1 and the objective of the research. The respondents were also asked for some information related to their personal profile and to their actions regarding high-performance judo. A pilot test of the

interview script was conducted with two Brazilian judo experts. After the pilot test no need for corrections were identified and the semi-structured interview script was applied.

#### 4.1.2 *Sample and data collection procedures*

The interviewed stakeholders were selected through a non-probabilistic approach (sampling is based on the researcher's judgment) and by convenience (the accessible individuals) (LI; PITTS; QUARTERMAN, 2008; SKINNER; EDWARDS; CORBETT, 2015; VEAL; DARCY, 2014). The selected individuals were those who were able to answer questions about the organizational factors influencing international sporting success in high-performance judo. As high-performance sport is international by definition (DE BOSSCHER et al., 2008a), athletes, coaches, performance directors and other experts from different nations were selected according to the following criterion: being from any of the 20 countries with the highest score in Olympic judo competitions from 1992 to 2012 (last twenty years and last six Olympic Games).

In accordance with the scoring system adapted for judo (10 points for the gold medal, 6 points for the silver, 4 points for bronze<sup>3</sup>, 2 points for fifth and 1.6 points for seventh). The top 20 countries in the Olympic Games from 1992 to 2012 are shown in Table 4.

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<sup>3</sup> In judo competitions, two athletes win the third place, due to the competition system used (elimination with double repechage).

Table 4: The 20 countries with the highest score in judo competitions at the Olympic Games 1992-2012.

Country	Barcelona 1992	Atlanta 1996	Sydney 2000	Athens 2004	Beijing 2008	London 2012	Total	Average
1 Japan	63.2	63.6	61.6	92	57.2	45.6	383.2	63.87
2 France	50	48	48.8	17.2	27.6	42	233.2	38.87
3 Korea	29.2	53.6	29.2	28.4	31.6	37.2	209.2	34.87
4 Cuba	30	34	39.6	26	32	23.6	185.2	30.87
5 China	18	18	35.6	28	34	15.2	148.8	24.80
6 Germany	20	31.2	9.6	26.8	13.6	20	121.2	20.20
7 Russia	11	10.4	15.6	25.6	7.6	45.2	115.6	19.27
8 Netherlands	10	14	15.6	20	24	13.6	97.2	16.20
9 Brazil	10	13.2	18.4	9.6	17.2	27.6	96	16.00
10 Spain	27	17.6	16.8	7.6	5.6	2	76.4	12.73
11 Italy	8	10	28	7.6	11.6	8	73.2	12.20
12 Belgium	14	26	12	6	3.6	6	67.2	11.20
13 Georgia	10	7.2	5.6	19.6	14	10	66.4	11.07
14 Hungary	30	4	0	0	6.4	15.6	55.6	9.27
15 Great Britain	24	5.2	6	3.6	3.2	11.6	53.6	8.93
16 DPR Korea	0	10	7.6	9.2	16	10	52.8	8.80
17 Poland	19	21.6	0	3.6	3.6	3.6	51.2	8.53
18 United States	11	7.2	5.2	4	4	17.6	49.2	8.20
19 Mongolia	3	6	0	4	15.6	13.6	42.4	7.07
20 Azerbaijan	10	1.6	5.2	4	14	3.2	38	6.33

Unlike quantitative studies, there is no rigor to defining the sample size in qualitative research. However, it is essential to establish universality and that the number of participating individuals can provide in-depth information about the phenomenon that is being explored in the research (CRESWELL, 2012; KRIPPENDORFF, 2013).

Based on the established universality from the 20 countries, possible respondents were contacted by e-mail, through which individuals received information about the research objectives. The interviews took place in three instances: the first was during the 8th International Judo Research Symposium held on August 25th 2013 in Rio de Janeiro; the second occurred during the 2013 Judo World Championships, in Rio de Janeiro from 26-31 August 2013; and the third took place in the workplaces and/or training places of individuals from some European countries, especially in Belgium, France and the Netherlands, in the second half of 2013.

According to the availability of the interviewees, the Phase 1 sample consisted of 33 individuals, including athletes, coaches, and performance directors and experts (researchers and professionals who work with judo) from 11 countries. Table 5 shows the composition of the sample (organized in alphabetical order by country).

Table 5: Sample of stakeholders participating in the Phase 1.

Country	Athletes	Coaches	Performance Directors	Experts	Total
Belgium	1	-	1	-	2
Brazil	2	2	1	1	6
Cuba	2	1	1	1	5
France	-	1	2	1	4
Germany	-	1	-	2	3
Hungary	-	1	1	-	2
Italy	-	-	-	1	1
Japan	1	-	-	2	3
Netherlands	-	-	1	-	1
Russia	-	-	1	-	1
United States	2	2	1	-	5
<b>Total</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>33</b>
	24.24%	24.24%	27.27%	24.24%	100%

The sample shown in Table 5 consists of individuals from 11 (55%) countries out of the 20 countries, which reached the highest score at the Judo Olympic Games competitions from 1992 to 2012. The interviews were conducted face-to-face between the researcher and each respondent, performed in Portuguese, Spanish or English. The researcher had an interview script in these three languages. In some cases, there was an interpreter to enhance understanding (namely, for Portuguese-French and English-Japanese). All interviews were recorded with a device for this type of procedure and were later entirely transcribed.

There was a lack of availability or willingness from individuals from Spain, the United Kingdom and Poland to participate. In the six other countries - Azerbaijan, China, South Korea, North Korea, Georgia and Mongolia - individuals attributed their non-participation to the difficulties in proficiency of the languages used in this research and/or to the same lack of availability or willingness. This was one of the limitations of this study.

Table 6 provides information about the profile of the 33 stakeholders interviewed, such as gender, age (average and standard deviation) and sporting and education level. This information was obtained during the interviews.

Table 6: Profile information of Phase 1

	Gender		Age (average and standard variation)		Sporting level	Education
	Male	Female				
Athletes (8)	50%	50%	25,8	(± 2,8)	Olympic	50% graduate 25% post-graduate 12,5% undergraduate 12,5% high school
Coaches (8)	100%	-	52,8	(± 6,7)	Olympic	62,5% graduate 37,5% post-graduate
Performance Directors (9)	89%	11%	47,9	(± 9,9)	Olympic	44,4% graduate 56,6% post-graduate
<i>Experts</i> (8)	87,5%	12,5%	50,8	(± 14,6)	-	100% post-graduate

The sample had some imbalance regarding gender, particularly concerning the coaches and performance directors. This is in line with international findings that showed that only 10% of coaches and performance directors in the international high-performance are female. Nevertheless, the main feature of the sample is that athletes, coaches and performance directors act at an Olympic level. Overall, the sample for Phase 1 is qualified to achieve the objectives of this phase and of the research.

#### 4.1.3 Data analysis

The transcripts of the interviews were analyzed using Content Analysis. Content Analysis is defined as the identification of content in messages to obtain indicators (quantitative or not) which make it possible to relate corresponding concepts to a particular research problems (LI; PITTS; QUARTERMAN, 2008). Because of its qualitative nature, Content Analysis is considered an advantageous method for the identification and in-depth analysis of information on social realities, which would not be possible through quantitative methods (BARDIN, 2011; KRIPPENDORFF, 2013). The basic procedure of Content Analysis involves the delineation of categories and subcategories relevant to the study purposes. According to Bardin (2011), the

categories and subcategories are groupings of textual elements that have common characteristics or meanings.

Researchers who use Content Analysis are able to build categories and subcategories in three ways: closed, open or mixed. The closed categories are related to a deductive approach, that is, the categories are defined based on evidence from literature. The open categories are built during the course of the interviews and the research. This is also called an inductive approach, in which the results obtained generate new concepts or theories. In turn, the mixed categories incorporate characteristics of the open and closed approaches to categorization and it is classified as a kind of deductive-inductive approach. This form allows for adaptations that add new results to existing theoretical models (BARDIN, 2011; KRIPPENDORFF, 2013; QUEIRÓS; GRAÇA, 2013; SKINNER; EDWARDS; CORBETT, 2015; VEAL; DARCY, 2014).

In this study, the mixed form of categorization was used, based on the two previously mentioned theoretical approaches. The first was based on the nine pillars of the SPLISS model from De Bosscher et al. (2006): (1) Financial resources; (2) Organization, structure and integrated approach to sport development; (3) Sport culture and participation; (4) Talent identification and development; (5) Support for athletes' careers and retirement; (6) Sport facilities; (7) Support and development of coaches; (8) System of national and international competitions; and (9) Scientific research applied to sports. The justification for choosing the SPLISS model for the categorization process was its relevance and consistency concerning the factors for international sporting success that have been previously explained in the "theoretical background" section.

The second was based on the concepts from Systems Theory (resources or inputs, processes, products/results or output and the environment), particularly in relation to environmental factors. The justification for the use of Systems Theory is its relevance in the understanding of sports development in a country (CHELLADURAI, 2009; LYLE, 1997).

To conduct the Content Analysis, the QSR NVivo version 10.0 software was used as recommended by a number of authors (CRESWELL; PLANO CLARK, 2011; CRESWELL, 2012; KRIPPENDORFF, 2013; SKINNER; EDWARDS; CORBETT, 2015; SOTIRIADOU; BROUWERS; LE, 2014; VEAL; DARCY, 2014). Two

independent researchers who are familiar with the research topic, both concerning theoretical approaches used and the chosen procedure of analysis, carried out the categorization process.

To measure the reliability of the categorization performed, Krippendorff's alpha agreement coefficient was used. This coefficient is used in order to reduce the possible subjectivity that qualitative research is often criticized for (CRESWELL; PLANO CLARK, 2011). Krippendorff's alpha ( $\alpha$ ) measures the agreement between two or more researchers who categorized, evaluated, observed, or judged data content (HAYES; KRIPPENDORFF, 2007). It consists of a generalization of various reliability rates used in qualitative procedures (such as Scott's pi and Cohen's kappa) and it is considered the most appropriate reliability measure for Content Analyses or similar procedures (KRIPPENDORFF, 2011). While Cohen's kappa considers the disagreements as a tendency and overestimates reliability when coders have unequal tendencies for coding categories, Krippendorff's alpha applies one general mathematical form to a great variety of data and makes it possible to measure the reliability in the Content Analysis outputs when there are disagreements or even if there are missing data in the categorization process (KRIPPENDORFF, 2013).

In order to calculate the Krippendorff's alpha, each text element categorized was rated as "0", if there was an agreement between the categorization carried out by two researchers, or rated as "1", if there was no agreement on the categorization made by the two researchers.

To measure Krippendorff's alpha for the categorization performed by two researchers in this study, the SPSS for Windows version 20.0 software was used, in addition to the macro package developed by Hayes and Krippendorff (2007). The values for Krippendorff's alpha range from zero to one:  $0 \leq \alpha \leq 1$ , where coefficients equal to zero represent total disagreement and coefficients equal to one represent total agreement in a categorization process performed by two or more researchers. According to Seppänen (2009), Krippendorff's alpha coefficients can be interpreted as follows:  $\alpha < 0.20$  (very weak);  $0.21 < \alpha < 0.40$  (weak);  $0.41 < \alpha < 0.60$  (moderate);  $0.61 < \alpha < 0.80$  (strong); and  $\alpha > 0.81$  (very strong). The textual elements, for which no consensus regarding their categorization was found, were discussed between the two researchers and later on classified in the categories established.

## 4.2. Results

The aim of Phase 1 was to identify the organizational factors influencing the international sporting success in high-performance judo, through Content Analysis in the interviews with 33 stakeholders from 11 countries. The categorization process identified 878 textual which were grouped into 11 categories and 44 subcategories, established in accordance with the SPLISS model and with Systems Theory (DE BOSSCHER et al., 2006) and with Systems Theory (CHELLADURAI, 2009).

The content analysis conducted by two researchers had one Krippendorff's Alpha of 0.48, which is considered a moderate agreement level. There was a disagreement in the categorization of 190 (22.9%) textual elements. These 190 textual elements were discussed and classified into the categories according to the joint analysis of the two researchers. This procedure resulted in the concordance of 100% on the categorization carried out by two researchers and Krippendorff's Alpha equals 1.00. More details about the calculation of Krippendorff's Alpha are shown in Appendix 3.

The results highlighted the number of textual elements identified. Nevertheless, it also showed the number of interviewees who cited the textual elements in each category and their subcategories. The total number of individuals in a category considered all interviewees who said at least one textual element of a subcategory in its respective category. In Table 7, a synthesis of the 11 categories, the 44 subcategories are presented in decreasing order of the number of textual elements identified.

Table 7: Categories and subcategories generated from the content analysis performed.

Categories	Textual Elements 878 (100%)	N 33 (100%)	Subcategories	Textual Elements 878 (100%)	N 33 (100%)	Example Quotes
<b>1. Sport system, organization and structure</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to management, structure, organization, communication, integration, long-term planning, strategic and system	28 (84.8%)	<b>1.1 Sport System</b>	47 (5.3%)	23 (69,7%)	"I think you need to have a system, you need to have a system. If you have a system, end" (Interviewee 29)
			<b>1.2 Organization</b>	38 (4.3%)	17 (51,5%)	"I mean, organization... like I said, they did a really good job with the exposure from the Olympics and the success that we had, they're really doing a good job, taking the success and running with it, you know?" (Interviewee 32)
			<b>1.3 Long-term Planning</b>	33 (3.7%)	16 (48,5%)	"It is planning. I think the main issue is planning" (Interviewee 18)
			<b>1.4 Professional staffs</b>	21 (2.4%)	15 (45,4%)	"...more qualified managers in all areas of sport" (Interviewee 5)
			<b>1.5 Clear roles of Judo Organizations</b>	16 (1.8%)	11 (33,3%)	"The positive characteristics I think – Country Name - is a highly organized country in this regard. Each one has its responsibilities" (Interviewee 4)
			<b>1.6 Management Structure</b>	15 (1.7%)	10 (30,3%)	"So if you do not have a high level management structure, you cannot have a qualitative mass to compete" (Interviewee 18)
			<b>1.7 Communication and Integration among Judo organizations</b>	13 (1.5%)	8 (24,2%)	"Confederations, Federations, and Clubs – communication networks among those three institutions should be well implemented in order to allow then to towards the same objectives. So judo would get increasingly better, constantly presenting higher levels, and better results. I think this is it" (Interviewee 4)
<b>2. Sport participation at all levels</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to the quantity (and quality) of Judokas	30 (90.9%)	<b>2.1 Absolute number of Judo players</b>	76 (8.7%)	25 (75,8%)	"Today we have about 600,000 people playing judo; it's a lot; this is what makes judo strong in our country. Above all, it's the number of people who attend our training every day" (Interviewee 14))
<b>2.2 Quality of young Judokas</b>			38 (4.3%)	20 (60,6%)	"...you had human resources, because there were many people practicing judo, but you didn't have good level athletes in the grassroots level , things became difficult when they became adults" (Interviewee 6)	
<b>2.3 Quality of Judo partners</b>			29 (3.3%)	18 (54,5%)	"The quality of the judo competitions comes from the quality of training partnership, the better the partnership, the better the judoka" (Interviewee 17)	

Categories	Textual Elements 878 (100%)	N 33 (100%)	Subcategories	Textual Elements 878 (100%)	N 33 (100%)	Example Quotes	
<b>3. Athletic career and post career support</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to the support of the athlete's career and actions involving their post-career	120 (13.7%)	28 (84.8%)	<b>3.1 Support for sufficient dedication to training and professional possibilities</b>	40 (4.5%)	20 (60,6%)	"So that the athletes are employed in a company, so they are financially secure and also so they can concentrate on the athlete's career..." (Interviewee 26)
				<b>3.2 International internships and training camps</b>	30 (3.4%)	16 (48,5%)	"...it is impossible in - my country -, so we need a lot to go to other countries. You will need to be comparable to the best ones" (Interviewee 2)
				<b>3.3 Holistic support</b>	28 (3.2%)	20 (60,6%)	"The multidisciplinary team, so it's nutritionist, psychologist, physical trainer, coaches and other areas that are involved" (Interviewee 6)
				<b>3.4 Post-career program</b>	15 (1.7%)	10 (30,3%)	"Sometimes not... but you need to think. For me, it's most important to also think about what's happened after the success..." (Interviewee 15)
				<b>3.5 Technical and tactical support</b>	7 (0.8%)	5 (15,2%)	"The coaching staff and experts involved, must prepare the athlete in such a manner that they are capable of giving their best performance in the context of the competition" (Interviewee 27)
<b>4. Financial resources for Judo</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to the investment, financial resources monetary, money, etc.	102 (11.6%)	28 (84.8%)	<b>4.1 General funding</b>	63 (7.2%)	25 (75,8%)	"A budget, obvious. The budget is important" (Interviewee 32)
				<b>4.2 Funds for competitions and training</b>	23 (2.6%)	15 (45,5%)	"To fly away overseas for one tournament. You know... to train together, fight and come back, and fly away again. you know? It is a hard experience for us. And the manager of money." (Interviewee 30)
				<b>4.3 Funds for athletes</b>	8 (0.9%)	6 (18,2%)	"That is one of our problems; it is having athletes in fulltime. Athletes do not have to work or they can go to school, so... Finance all of them, if we can" (Interviewee 30)
				<b>4.4 Funds for management structure</b>	3 (0.3%)	4 (12,1%)	"...for the same reason the economy, without resources a part of this structure has disappeared " (Interviewee 10)
				<b>4.5 Funds for coach education</b>	3 (0.3%)	3 (9,1%)	"If you want to organize a lot of training sessions, this is a lot of people. You need a lot of money to organize this and you need a lot of time for these teachers to come to these training sessions" (Interviewee 14)
				<b>4.6 Funds for the multidisciplinary team</b>	2 (0.2%)	3 (9,1%)	"Having financial management. In modern judo, financial management can provide all means for suitable preparation, that's to say, all necessary means to get good training for athletes" (Interviewee 13)

Categories	Textual Elements 878 (100%)	N 33 (100%)	Subcategories	Textual Elements 878 (100%)	N 33 (100%)	Example Quotes
<b>5. Quality of teachers and coaches</b>	99 (11.3%)	24 (72.7%)	<b>5.1 Quality of teachers at the grassroots level</b>	34 (3.9%)	14 (42,4%)	"We need high level coaches to teach judo. If this coach doesn't exist, one can't teach judo... judo would get weird, very poor... stay in its small dojos..." (Interviewee 29)
			<b>5.2 Training programs for teachers and coaches</b>	29 (3.3%)	14 (42,4%)	"...trained coaches and training for them" (Interviewee 13)
			<b>5.3 Quality of elite coaches</b>	28 (3.2%)	13 (39,4%)	"The most important again, is the final trainer and that he provides the right judo player with the right type of judo" (Interviewee 1)
			<b>5.4 Professional conditions for teachers and coaches</b>	8 (0.9%)	7 (21,2%)	"...career perspectives for a judo coach" (Interviewee 27)
<b>Salient Themes</b> All words, phrases and sentences that have quotes related to the quality of teachers and coaches in the early stages (grassroots level), and to talent at elite levels						
<b>6. Tradition, history and cultural aspects</b>	59 (6.7%)	24 (72.7%)	<b>6.1 Success tradition and role models</b>	21 (2.4%)	22 (66,7%)	"...we won 54 world medals for females and of those 16 were golden medals; and we also earned 24 Olympic medals, of which 6 were champions... we didn't have any tradition, and then..." (Interviewee 9)
			<b>6.2 Popularity of Judo</b>	14 (1.6%)	22 (66,7%)	"Judo is, of course, the most popular and strongest elite sport in – country name" (Interviewee 26)
			<b>6.3 Fighting spirit</b>	12 (1.4%)	9 (27,3%)	"...the willpower, the heart, we are strong women despite the obstacles" (Interviewee 13)
			<b>6.4 History of Judo in the country</b>	8 (0.9%)	6 (18,2%)	"There is a natural development. Because the Japanese colonization, it favoured to us the development of judo and the technical high level of judo here" (Interviewee 6)
			<b>6.5 High performance culture</b>	4 (0.5%)	5 (15,2%)	"I think my – country name – it is one of the sport powers of the world" (Interviewee 31)
<b>Salient Themes</b> All words, phrases and sentences that have quotes related to the history of judo and its tradition in a country, the results, popularity and cultural aspects related to high-performance judo						

Categories	Textual Elements 878 (100%)	N 33 (100%)	Subcategories	Textual Elements 878 (100%)	N 33 (100%)	Example Quotes	
<b>7. Events: Competitions</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to national and international sport competitions,	58 (6.6%)	22 (66.6%)	<b>7.1 International competitions</b>	28 (3.2%)	16 (48,5%)	“They can travel; they can compete and be exposed to all types of fights...” (Interviewee 32)
				<b>7.2 Compete</b>	10 (1.1%)	8 (24,2%)	“In judo we have to compete, ...and for us this is very difficult, because international competitions are very expensive” (Interviewee 9)
				<b>7.3 National calendar and competition structure</b>	9 (1.0%)	8 (24,2%)	“In that system there is a training and competition programme that helps to grow an athlete at the right time and right phase” (Interviewee 27)
				<b>7.4 Host nation effect</b>	6 (0.7%)	5 (15,2%)	“I think to be a host country of major events brings bad things, but otherwise motivated a lot. Now, we're living in a time that is far better than the other countries” (Interviewee 8)
				<b>7.5 Competitions at grassroots level</b>	5 (0.6%)	4 (12,1%)	“A lot of the 750 judokas, start the competitions with their kids” (Interviewee 27)
<b>8. Training facilities</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to sport facilities and training centres	38 (4.3%)	16 (48.4%)	<b>8.1 Training centres</b>	25 (2.8%)	14 (42,4%)	“I think that have a big tendency that every country looks to some centre... They put all the athletes together in one centre and they build everything around the centre...” (Interviewee 1)
<b>8.2 Local spaces for practice</b>				13 (1.5%)	9 (27,3%)	“...enough places with minimum infrastructure to practice judo” (Interviewee 10)	

Categories	Textual Elements 878 (100%)	N 33 (100%)	Subcategories	Textual Elements 878 (100%)	N 33 (100%)	Example Quotes	
<b>9. Governments (interest), Sponsors and Media</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to specific environmental characteristics, such as political influence, media, sponsors, etc.	35 (3.9%)	17 (60.6%)	<b>9.1 Government interest</b>	18 (2.1%)	16 (48,5%)	“Athletes understand, and the country, the prime minister, and the Ministry support the job 100%” (Interviewee 28)
				<b>9.2 Media and Sponsorship</b>	12 (1.4%)	9 (27,3%)	“In my opinion, the media is fundamental in this system as they communicate both our work and the underlying outcomes. We can’t get sponsorship without the media, and without sponsorship...” (Interviewee 05)
				<b>9.3 Country location</b>	5 (0.6%)	5 (15,2%)	“I think it is very different for us, because we are so far away from everybody” (Interviewee 30)
<b>10. Talent identification and development</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to the identification, detection, selection and promotion process of Judo talents	21 (2.4%)	11 (33.3%)	<b>10.1 Selection process</b>	14 (1.6%)	9 (27,3%)	“The most important is, for example, the organization and talent hunting. Any talent, wherever they are, at any age, we hunt” (Interviewee 09)
				<b>10.2 Competition for selection</b>	5 (0.6%)	7 (21,2%)	“We send some coaches to see if some athletes who are competing, if they have some abilities..., when they have the age to start high school. As this is a national coach that knows these guys, it is possible for males and females to be selected and to propose if they `would please follow a sport program?” (Interviewee 14)
				<b>10.3 Talents promotion</b>	2 (0.2%)	3 (9,1%)	“It is important because it is often lost talents; they passed and they were ‘burned’. It is necessary that they gradually pass through all the stages, from the early to the adult stage. When they reach the national teams, they will already professional...” (Interviewee 10)
<b>11. Scientific support</b>	<b>Salient Themes</b> All words, phrases and sentences that have quotes related to applied scientific research in Judo	20 (2.3%)	09 (27.2%)	<b>11.1 Applied research (sport pedagogy and technical/tactical, physical training)</b>	20 (2.3%)	9 (27,3%)	“We now have 100 people in this institute where 2 people are devoted only to judo. This is very good, our scientific results are directly used on training” (Interviewee 20)

### Category 1 “Sport system, organization and structure”

The “Sport System, Organization, and Structure” category had the greatest identified number of textual elements, 183 (20.8%); It was cited by 28 (84.8%) of the individuals interviewed and is composed of 7 subcategories: 1.1 “Sport System”, 1.2 “Organization”, 1.3 “Long-Term Planning”, 1.4 “Professional Staffs”, 1.5 “Clear Roles of Judo Organizations”, 1.6 “Management Structure”, and 1.7 “Communication and Integration among Judo Organizations”.

In summary, this category highlighted that international sporting success is the result of the existence of a management structure. Therefore, to achieve goals and international sporting success the existence of some processes that are described below is required. Regarding the subcategory 1.1 “Sport System”, the interviewees reported the idea that there should be a clear pathway for the athletes’ development. Judo organizations in one nation should collaborate and develop a system that addresses the goal of boosting high-performance judo. For example, one interviewed highlighted the following: *“...the difficulties are economic difficulties, but with a good sport system which we have in – country name –, where we perform grassroots competitions, that is, we try to solve the economic problems overcoming and going over it, which is difficult but it is reality and it's something we have shown...”* (Interviewee 9).

As can be seen in the quote above, the system will be responsible to promote judo in the country, even if there are "inhibitors" in the environment. Therefore, the system challenge includes the promotion of sporting practice, athletes’ training, the organization of competitions, and all other activities that are fundamental for the achievement of sporting success in an international context. Interviewees 14 and 26 respectively mentioned: *I think you need a model, organization, and between 1000 or 500 judo players training daily, 2 hours, this is a good system to have a very, very good team...”. “Organisational structure of the judo national federation is necessary to achieve international success.”*

In most countries, the National Judo Organization (federation) is responsible for the development of the elite sport system (INTERNATIONAL JUDO FEDERATION, 2015a); and in some cases, they are helped by their national sport policy organization. To be effective, the system needs to be integrated and communication is necessary among different organizations (DE BOSSCHER et al., 2006; GREEN; OAKLEY, 2001).

The textual elements identified, and their relation to this concept, were organized into subcategories (1.5 “Clear roles of Judo Organizations”, 1.6 “Management Structure” and 1.7 “Communication and Integration among Judo Organizations”) and two example quotes are following: “Clear roles of Judo Organizations”: *“Regarding Judo, I think the most positive factor it concerns the infrastructure created for the sport in my country. In general, all steps and the organizations are well divided and the other, I think, it is also the attention given for the athletes, the part of health, etc.”* (Interviewee 10). “Communication and Integration among Judo organizations”: *“The first country – has clubs and the federation, and the athletes are in the clubs and the federation is independent. In – the second country – the clubs and the federation work together. It is the difference in relation to – the first country”* (Interviewee 17).

Furthermore, some authors pointed out the importance of the organization, long-term planning and constant evaluation of the processes (BAYLE; ROBINSON, 2007; CHELLADURAI, 2009; DE BOSSCHER et al., 2015a; O’BOYLE, 2014) and qualified human resources (CHELLADURAI; MADELLA, 2006; DOHERTY, 1998; TAYLOR; MCGRAW, 2006). These variables were identified through the interviews and organized into the respective sub-categories. The quotes from the Interviewee 18 and Interviewee 5 described this context: *“Exactly, they (national judo federation) have a very good organization. – Country name - in terms of structure, they do not work without a plan”. “Today we have a serious management, competent, a qualified work team and they have been increasingly improved. With human resources and a better work team, the planning and actions become better too”.*

## Category 2 “Sport Participation at all Levels”

In the “Sport Participation at all Levels” category, 143 (16.3%) textual elements in 30 (90.9%) interviews are identified and grouped into the following subcategories: 2.1 “Absolute number of Judo players”, 2.2 “Quality of Young Judokas” and 2.3 “Quality of Judo Partners”. The content analysis performed on the interviews demonstrates the importance of the number of practitioners at all levels and the technical and tactical ability of the existing youth talents and high-performance athletes.

The idea that interviewees expressed in this category was: the higher the number of participants, the greater the chances of talented individuals emerging and the greater the possibility that athletes of technical and tactical ability exist who will

have a greater chance of achieving international results. As well described by the interviewees 29, 5 and 14: *“We don’t produce many medals, we don’t have many judo people in – country name”*. *“So, when you are looking analysis the judo federation – of my country –, and its system, it is about 2000 maybe less, but each day 2000 kids are training to be champion”*. *“You need a lot of champion, a lot of member; you need at least 200 guys concerned by this kind of international competition”*.

Therefore, according to the interviewees, in addition to the absolute number of practitioners, it is important to have a considerable number of judo athletes with high technical and tactical sport quality. Because of this, the subcategories "Quality of Young Judokas" and "Quality of Judo partners" were created. These subcategories can be controversial, since the existence of athletes with technical quality can be the result of existing processes in a sport system (HOULIHAN; GREEN, 2008; RÖGER et al., 2010). Nevertheless, these subcategories describe the following context as illustrated by the following quote (see also Table 7) *“The quality of judo competitions comes from the quality of the training partnership: the better the partnership is, the better the judoka”* (Interviewee 15). Therefore, the subcategories "Quality of Young Judokas" and "Quality of Judo partners" were maintained in this category and they will be discussed based on the SPLISS model and Systems Theory concepts.

### Category 3 “Athletic career and post career support”

In the “Athletic Career and Post-Career Support” category, 120 (13.7%) textual elements were identified in 28 (84.8%) interviews. In this category, the established subcategories were: 3.1 “Support for sufficient dedication to training and professional possibilities”, 3.2 “International internships and training camps”, 3.3 “Holistic Support”, and 3.4 “Technical Support” for athletes, in addition to 3.5 “Post-Career Programs”.

This category demonstrated the importance that different types of support for the athlete are important to achieve international success. The types of support cited by the interviewees varied from wages and technical sporting support to a multidisciplinary team for training. But a reasonable amount of textual elements portray the importance that judo be attractive to individuals who wish to seriously engage in an athletic career in this sport. This attractiveness involves the potential of athletes to fully devote themselves in training and competitions, as well as the professional opportunities that judo may provide for the athletes. Take for instance one of the USA

interviewees' declaration 'In this country there is a greater supply in the number of scholarships for wrestlers than for judo athletes.' Or as reported in the United States, judo athletes consider switching to professional mixed martial arts (MMA) leagues, as Ronda Rousey, who placed 3rd in the 2008 Beijing Olympics and who has since 2012 become an Ultimate Fighting Championship idol. In other countries similar situations occurred, with athletes deciding to switch to other sports that offer greater professional opportunities compared to judo. Another quote also makes clear this identified issue: *"...there are a few judo players in my country, and most of them never will be Olympians. So, they going to MMA leagues because there is no money in judo"* (Interviewee 33).

The interviews also reported on the importance of international internships or training camps. International internships and training camps provide international experience for athletes and a high quality training for athletes, because these experiences involve a wide array of partners with higher levels of technical and tactical quality: *"My athletes are at home during 16 or 15 days per year. They work with me 320 per year. But, all the time we move... we have a camp in one city, but is not only this, in Japan, we are here (other country)... I think this is the one of the most important think"* (Interviewee 28).

Moreover, some of the interviewees' statements also reported the need for holistic support in athletes' lives, including in educational orientation. Educational orientation can allow for professional options at the end of the athlete's career (WYLLEMAN; REINTS; DE KNOP, 2013). The interviews report that in some countries athletes need to reconcile their training with university courses in order to be prepared for their later life and their entrance into the labour market when their sporting careers end. By contrast, it was identified in the interviews that the education and the post-career transition occurs informally and is based only on the athlete's personal choice in most countries, with the exception of some countries like Belgium, France, Germany, the Netherlands and the United States. However, not much information was obtained about programs for the athlete's education and their preparation for post-career. It was not the purpose of this research to analyse this issue in depth.

#### Category 4 “Financial resources for Judo”

“Financial Resources for Judo” is the third category, with 102 (11.6%) textual elements identified and presented in 28 (84.8%) interviews. 4.1 “General Funding”, 4.2 “Funds for Competitions and Training”, 4.3 “Funds for Athletes”, 4.4 “Funds for the Management Structure”, 4.5 “Funds for Coach Education”, and 4.6 “Funds for the Multidisciplinary Team” were the six subcategories established.

The financial resources have been noted as one of the current characteristics of high-performance sport (BEAMISH; RITCHIE, 2006) and it can even be considered to predict success of countries in the Olympic Games (BERNARD; BUSSE, 2004; DE BOSSCHER et al., 2015a; VAGENAS; VLACHOKYRIAKOU, 2012). For the achievement of success in high-performance judo, the financial resources are only effective when applied in a planned manner and in situations that actually matter (PAPPOUS; HAYDAY, 2015). The Interviewee 31 makes this context clear in his quote: *“I think whatever the federation, money is important”*.

To a certain extent, financial resources will facilitate the implementation of important activities for the achievement of success in international judo, such as those expressed in the subcategories. If a country does not have a sufficient budget to invest in different areas, there will be the prioritization of investment in one or a few important areas, as evidenced in the reports from Cuba interviews. Cuba is one of the 10 best performing countries in Judo Olympic competitions in the period 1992-2012. Recently, the economic / political situation provoked the need for financial management in this country. The resources available are mainly invested to send Cuba’s judo teams to the major international competitions. Nonetheless, lodging and participation in international training camps are paid for with the assistance of the International Judo Federation and partnerships with the organizations involved in judo in different countries (clubs, regional federations, etc.). Example quote: *“But I hadn’t funds, so it took me years to even get around the country, and try to compete in every tournaments.”* (Interviewee 32).

#### Category 5 “Quality of Teachers and Coaches”

The “Quality of Teachers and Coaches” had 99 (11.3%) textual elements identified in 24 (72.7%) interviews. The following subcategories were: 5.1 “Quality of teachers at the grassroots level”, 5.2 “Training programs for teachers and coaches”,

5.3 “Quality of elite coaches” and 5.4 “Professional conditions for teachers and coaches”.

According to many authors, the quality of human resources is essential for achieving success (CHELLADURAI; MADELLA, 2006; DOHERTY, 1998; TAYLOR; MCGRAW, 2006). In high-performance sport, this is especially true when the human resources are the sport teachers and coaches (BÖHME, 2000; BROUWERS; SOTIRIADOU; DE BOSSCHER, 2015; DE BOSSCHER et al., 2006). In this category, the interviews content analysis emphasised the necessity of qualify professionals who work as from the grassroots level to the elite level. The following quote describes this conception: *“I think the educational process also makes difference. In some countries like in France and Germany, the guys have another focus on the grassroots level and with a good quality in this level the athlete will have a longer time in their sport career. So, I think the educational process also important”* (Interviewee 3).

In judo, it is common to distinguish between these two types of professionals. Teachers are considered "senseis" and are responsible for the judo initiation and the judokas' learning of the techniques and tactics. Coaches are responsible for the more general preparation of athletes, including technical and tactical training, the coordination of physical preparation and other actions that are involved in the high-performance sport. Sometimes the individual judo professionals play both these roles, but this is not always the case (NUNES, 2013).

The need for training programs for judo teachers and judo coaches, and for the conditions that enable stability and enhance these types of human resources were identified in the interviews. Mainly in the European countries, sport teachers and coaches need a special certificate to work within a specific sport and in judo in particular (EUROPEAN JUDO UNION, 2015). In other countries, like in Brazil, these professionals need a bachelor's degree in physical education to exercise the position of sport teacher or coach (MADURO, 2012). It was not the purpose of this research to analyse the kinds of educational background of the judo teachers and the judo coaches in different countries. Nonetheless, the quality of teachers and coaches come from two types of education: from theoretical and from practical experience (ARROYO; ÁLVAREZ, 2004; MADURO, 2012). Certain authors have indicated that professionals with this profile have achieved this through continuing education and specific training programs (CÔTÉ, 2006; CUSHION; ARMOUR; JONES, 2003). According to some

interviewees, mainly from Cuba, France and Germany, National Judo Organizations, federations and clubs (should) promote training courses that produce qualified judo teachers and coaches, in terms of both specific training and scientific knowledge, as for example: *“In all categories, there is a coaches national meeting, where it discusses or presents the planning. This meeting takes place every year”* (Interviewee 18).

#### Category 6 “Tradition, History and Cultural aspects”

In the category “Tradition, History and Cultural aspects”, a total of 59 (6.7%) textual elements were found in 24 (72.7%) interviews and 6.1 “Success tradition and role models”, 6.2 “Popularity of Judo”, 6.3 “Fighting Spirit”, 6.4 “History of Judo in the Country” and 6.5 “High-performance Sport Culture” were established as subcategories.

As per the interviewees’ statements, the tradition of one sport, the existence of role models (idols stories), and the popularity of judo in a country are important facilitators in the achievement of international sporting success and were highlighted in this category. History, tradition, role models and popularity were identified by the interviewees from some countries. These characteristics can transmit some specific knowledge that is adopted by new generations, creating a type of sport culture that will be decisive in their sporting success. For example, the following quote: *“We have here what only top countries have; we had success in the past. We had a big team in the past, with a few champions’ athletes, but they had success. The advance is that we have some expertise in the international context”* (Interviewee 1).

The specific cultural environment of each country also provides individuals with a profile for combat sports. According to the interviewees, some countries possess a culture and history that people are seen as “warriors”. Conversely, in other countries where the social or economic rates are at high and stable levels, the population is not motivated to “fight” to be “winners”. The quote from the Interviewee 1 described this context: *“In our country the negative points, is the out of punch, the lack of desire to fight till the last chance”* (Interviewee 1).

Finally, another relevant point in the interviews is the fact that judo offers 56 medals in the Olympic Games (14 contestable medals per nation). For this reason the sport has become one of the main targets for investment in different high-performance sport policies. Germany, Cuba, the United States, Hungary, and Russia were identified

in interviews as being good examples of this fact. These countries already have good training centres, experience in athlete preparation and other important characteristics related to the sporting success in an international high-performance context.

#### Category 7 “Events: Competitions”

In the “Events: Competitions” category, 58 (6.6%) textual elements were identified in 22 (66.6%) interviews. In accordance with the SPLISS model, the textual elements in this category related to the following subcategories: 7.1 “International competitions”, 7.2 “Compete”, 7.3 “National calendar and competition structure”, 7.4 “Host nation effect” and 5.5 “Competitions at the grassroots level”.

This category showed the importance of events, or the participation in competitions. Participation in international competitions, for example, is important to reach international sporting success in high-performance judo. It seems obvious, but the interviews identified the need for previous experience in international competitions before participating in major competitions such as the Olympic Games. In international competitions, athletes can acquire international experience by competing with other opponents with different styles and different techniques, as described the Interviewee 2: *“In the international competitions you can compare your level with the best ones athletes”*.

The interviews also identified that hosting international sport events has a positive effect on the judo development in a country. These events could boost investments in sports, which is called a host nation effect (GRIX; CARMICHAEL, 2012; PAPPOUS; HAYDAY, 2015; SHIBLI et al., 2013) and allow for a kind of home advantage, as observed in international judo competitions (JULIO et al., 2013). As exemplified in the following quote: *“I believe that... for (country name) the host of the Olympic Games it is gone be very good I think. Because they put so much energy in the team now, the results will coming I think”* (Interviewee 2).

Moreover, the importance of national competitions was reported in the interviews, because a (technically qualitative) national sporting competition may improve the preparation of athletes. The existence of a well-organized calendar and good structures in national competitions were also mentioned in the interviews. Countries such as Japan and France encourage a higher national level of competition among athletes as part of athletic preparation plans. Additionally, according to the

interviewees, the national competitions may serve as a criteria for the selection of the youth talents who will possibly integrate into the national teams in the future. Nevertheless, the competitions for youths should be adapted because the initial participation in such events should prioritise experience, not final results (GRECO; BENDA, 2007).

#### Category 8 “Training facilities”

“Training Facilities” has 38 (4.3%) textual elements identified in 16 (48.4%) interviews. 8.1 “Training Centres” and 8.2 “Local Spaces for Training” were established as subcategories.

In relation to “Training Centres”, 14 interviewees reported a trend of "centralization" in relation to the training of the national teams. As reported by the interviewee 01: *“I think that have a big tendency that every country looks to some centre... They put all the athletes together in one centre and they build everything around the centre...”*. Indeed, the existence of training centres is also indicated by the SPLISS model as an important factor to achieve international sporting success. Training Centres are understood to be structures that encompass spaces for high-performance sport practice and infrastructures that attend to the needs of athletes and coaches (medical, physiotherapeutic, nutritional, psychological, physiological and biomechanical support, accommodation and room for social and cultural events etc.). It is also recommended that Training Centres have a strategic geographic placement and their own management (DE BOSSCHER et al., 2008a). Not all items proposed by these authors were cited, but the importance of centres was identified in the interviews, whether for permanent development of athletes or for preparation of athletes in specific pre-competitive periods.

As for the level "Local spaces for Training", the importance of adequate spaces to practice judo was reported by some interviewees ("Local spaces for Training"). The techniques that are practiced in judo typically involve throwing the opponent on the ground and/or the opponents' immobilization (BROUSSE; MATSUMOTO, 1999). Therefore, the spaces for judo practice need to be equipped with "tatamis" or "mats" made from materials that cushion fall and safeguard contact with the "ground", giving priority to the judoka's safety. The Interviewee 13 exemplified this issue: *“Across the*

*country, not only for the national team, but also for the children, it is necessary tatami, judo uniform, appropriate facilities, etc. to practice judo...".*

#### Category 9 "Governments (interest), sponsors and media"

The category "Governments (interest), sponsors and media" is also related to the environment and it was the ninth category found with 35 (3.9%) textual elements identified in 17 (60.6%) interviews. The following subcategories were established: 9.1 "Governmental Interest", influence of the 9.2 "Media and Sponsorship" and 9.3 "Country location".

This category showed that the existing environment and the national context might facilitate or inhibit the development of judo, as briefly mentioned in example quote in the Category 1. For instance, the interviewees indicated that judo was more popular in Japan than in any other country, given its Japanese cultural roots. Accordingly, the government, the private sector, and the media have a huge interest in judo in Japan, compared to other countries. Nevertheless, while this can be seen as a facilitator, in some cases it can also easily be an inhibitor. The latter situation could occur when these institutions are linked to scandals over trainers' abuse of athletes and the lack of gold medals at the Olympic Games. These instances may generate a negative image of judo in Japanese public opinion, as reported by one of the Japanese individuals interviewed.

In relation to the interest of governments, specific environmental situations that can favor the development of a sport in a country were also identified in the interviews. As interviewer 28 stated, the Russian judoka President positively influences and is crucial political facilitator for investment in Russian Judo, or in this other example quote: *"It is the government. The government develop sports like judo indeed. Sponsors, in my country, it is very difficult to exist in judo. It is on only in football, cycling, and tennis... In judo there are only two top athletes for now"* (Interviewee 2).

Another environmental characteristic identified in the interviews is a country's geographical location. Brazil, Cuba and the United States are far away from their competitors, especially from European and Asian countries where there are many great athletes. By contrast, the European continental countries are closer to their competitors. According to the interviewees, the proximity or distance of competitors influences the preparation of athletes, which affects the budget planning and

participation in international competitions, as well as participation in international training camps: *“In judo you need a partner. It is a constant exchange of knowledge. Then, you have to move to the places or centers (countries) that have structures and good athletes”* (Interviewee 3).

#### Category 10 “Talent identification and development”

With 21 (2.4%) textual elements in 11 (33.3%) interviews, “Talent Identification and Development” was the tenth category established. The subcategories were: 10.1 “Selection Process”, 10.2 “Competition for Selection” and 10.3 “Talent Promotion”, which are all related to the process of developing young talented judokas.

Due to its division by weight, a variety of body types are represented in judo. As a result, there are no tests that can identify a potential sporting talent by merely considering corporeal characteristics and physical abilities (LIDOR et al., 2005). In regard to the sporting talent and long-term training theme, critics recommend that judo athletes have a set of cognitive, perceptive, physical and psychological skills such as: learning techniques, coordination, speed, force, flexibility, resistance and competitiveness (FRANCHINI; CALMET; DEL’VECCHIO, 2011; INTERDONATO; MIARKA; FRANCHINI, 2013; SERASSUELO JUNIOR; OLIVEIRA; SIMÕES, 2009). Nonetheless, as reported by interviewees, in most countries the selection process of talented judokas occurs mostly in a subjective manner, generally through performance in competitions and training sections. The exceptions were France and Cuba, where the interviewees reported more effective talent identification systems and, with less intensity, Belgium and Germany which also described a plan for talent development.

It was identified in the interviewees’ that in some countries, such as Belgium, Cuba, France and Germany, the competitions and training sections that aim to identify and select the judo talents are well organized. Official coaches are sent to observe the performance of young athletes in predetermined events, during which a series of items involving technical, tactical and behavioural skills are carefully observed. The aim is to identify and select talented judo athletes who will be invited to join sport development programmes. By contrast, other countries have competitions simply to classify athletes and select them based on performances at younger age, without the purpose of observing the other skills involved in potential talent. Interviewees 10 and 27 respectively mentioned: *“catch talents based on the morphological and sports attitudes*

*of each one. Assessing children on the developmental stages and going through their sport development". "For the international competition planning, we select the best tournament for the required level per age category. Our selection system for Sub-18 and Sub-21 is well connected with the development of international level".*

Another point raised in this category involves the transition of sports talent to the main national teams. According to the interviewees from Brazil and USA, it is important that young talents get opportunities to compete in international events and major national teams are renewed. This fact would demonstrate the effectiveness of a sports talent micro-system, since promotion to the top teams is the last stage in the athletes development process (BÖHME, 2011; MARTINDALE; COLLINS; DAUBNEY, 2005; RÖGER et al., 2010).

#### Category 11 "Scientific support"

Despite the benefits that scientific knowledge can bring to judo development in general, the "Scientific Support" category had the least number of textual elements identified. With 20 (2.3%) textual elements in nine (27.2%) interviews, the twelfth eleventh and final category had just one subcategory: 11.1 "Applied Research" (for technical/tactical preparation and training).

The competitiveness exhibited in international judo results in a higher amount of investment in athlete preparation (FRANCHINI; DEL'VECCHIO, 2011; VILLAMÓN et al., 2004). Indeed, the interviewees expressed that in recent decades, there has been an increase in scientific research concerning the development of judo athletes, principally with regard to specific physical trainings. Appropriate pedagogical practices in the judo teaching processes for beginners were also identified in the interviews as an important factor for international sporting success, since according to the interviewees, solid learning is essential for creating athletes with technical and tactical quality. An example quotes in the Category 11 can be seen below: "Applied research (sport pedagogy and technical/tactical, physical training)": *"Physical, technical and audio-visual resources for the athlete understand everything that happens in the world of Judo"* (Interviewee 13).

### 4.3 Discussion

Even though the results have been identified from opinions of 33 individuals involved in the international high-performance judo, the 44 identified subcategories can be considered to be the organizational factors influencing the international sporting success in high-performance judo, while the 11 categories are the dimensions of a possible construct related to the international sporting success in high-performance judo. The results were similar to other studies (DIGEL, 2005; GREEN; OAKLEY, 2001). The analysis also confirmed that the SPLISS model pillars (DE BOSSCHER et al., 2006) are applicable to the organizational context of judo. The relationship of the SPLISS model with nine pillars among the 11 categories identified in this research Phase are shown in Table 8 as follows:

Table 8: The relationship among the categories and the SPLISS 9 pillars

Judo model	SPLISS model
1. Sport system, organization and structure	Pillar 2. Governance, Organisation and structure of sport policies: an integrated approach to policy development
2. Sport participation at all levels	Pillar 3. Foundation & participation
3. Athletic career and post career support	Pillar 5. Athletic career and Post-career support
4. Financial resources for Judo	Pillar 1. Financial support
5. Quality of Teachers and Coaches	Pillar 7. Coaching provision & coach development
6. Tradition, history and cultural aspects	-
7. Events: Competitions	Pillar 8. (Inter)national competition
8. Training facilities	Pillar 6. Training facilities
9. Governments (interest), sponsors and media	.-
10. Talent identification and development	Pillar 4. Talent identification and development system
11. Scientific support	Pillar 9. Scientific research

As cited in the chapter “Theoretical Background”, the SPLISS model is characterized by the specification of critical success factors for each pillar; a total of 96 CSFs have been identified. Although the SPLISS addresses the national overall sport policy level, the model has been shown to be applicable to particular sports, such as sprint canoe (SOTIRIADOU; GOWTHORP; DE BOSSCHER, 2013), athletics

(TRUYENS et al., 2014) and tennis (BROUWERS; SOTIRIADOU; DE BOSSCHER, 2015) all with their specific findings. This is also confirmed in this research project on judo and yields similar findings to the 44 subcategories identified here.

Some results can be highlighted. For example, the quality of teachers and coaches are important in judo. Once these professionals are qualified and motivated, they can have a multiplicative effect on the development of judo in a country, as is the case and has already been identified in other sports (BÖHME, 2000). The importance of participating in international internships and training camps is also an interesting and was identified in judo and is present in some sports. According to Green and Oakley (2001), international internships and training camps are effective strategies for the preparation of athletes and national teams, and seem to be the same for the sporting success in international high-performance judo. Another point that is similar in other sports and relays the need for effective sport policies is the existence of facilities (JANUÁRIO; SARMENTO; CARVALHO, 2009). Once a reasonable number of tatami or mats and the guidance of a skilled professional are present, judo can be practiced in different places, including schools, clubs, universities and several other public and private spaces. And most importantly, the most mentioned category, Category 1 “Sport System, Organisation, and Structure”, confirmed the need for well-managed systems and the demand (or pressure) that the National Judo Organization needs to be modern and effective in their planning, as has been mentioned by some authors cited in the section involving the contextualization of international judo (CHELLADURAI, 2009; SAEKI, 1994; SOTIRIADOU, 2013).

On the other hand, the influence of specific judo characteristics in the organizational factors that influence the international sporting success were evident. A first noteworthy point that concerns the specificities of judo was the Category 2 “Sport participation at all levels” which was the second most mentioned by the interviewees. By contrast, the findings of the SPLISS 2.0 study reported no evidence of the importance of sport participation for international sporting success (DE BOSSCHER et al., 2015a). This may possibly be related to the fact that in less organized or less popular sports, a broad sport participation is needed in order to develop athletes. In judo, judo players (especially athletes) are needed and their sport development needs to have quality, and later, they become athletes with technical quality and they will be high quality training partners. This was confirmed by the SPLISS authors who stated

that 'sport participation' should be analysed at a sport specific level (De Bosscher, Shibil, et al., 2015, p. 223). The initial concept explored in Category 2 is the positive relationship between the existence of a broad sport participation and the results achieved in international competition. It is similar to the "pyramid" model, which originated from the Olympic ideal of Pierre de Coubertin, who advocated the development of sport based on opportunities for sport practice and later on the pathways to help practitioners advance to levels of sporting excellence (DE BOSSCHER; SOTIRIADOU; VAN BOTTENBURG, 2013; HYLTON, 2013; SOTIRIADOU; SHILBURY; QUICK, 2008; SYED, 2012). However, in judo not just the number of practitioners is important, but also the number of judo athletes who have a certain technical and tactical ability. The more partners of better technical and tactical ability a judo athlete has throughout his/her sporting life, the better his/her sporting development and training will be.

At the same time, it is curious that the results revealed a low number of textual elements in the category 10 "Talent identification and development" and 11 "Scientific support". The "Talent identification and development", it could be an alternative to develop a higher number of high technical and tactical quality judo athletes. On the other hand, the low number of textual elements can be explained by the variety of weight categories in this kind of sport, which enables people with different body characteristics to be successful. Or by the late specialization of judo athletes (DE BOSSCHER et al., 2015b; JULIO et al., 2011). Scientific studies may also contribute to the development of good judo athletes. Despite the growing investment in high-performance judo athletes training reported by some studies (FRANCHINI; DEL'VECCHIO, 2011; JULIO et al., 2013; KRUMER, 2014; MIARKA et al., 2011), the low number of the textual elements in the "Scientific support" can be explained by the inherent traditionalism and conservatism in judo (FRANCHINI; DEL'VECCHIO, 2007; SAEKI, 1994; VILLAMÓN et al., 2004).

Second and in addition to the two judo specific characteristics mentioned above, the interviewees also reported the importance of two additional categories that were not considered in the nine pillars of the SPLISS model: Category 6 "Tradition, History and Cultural aspects" and Category 9 "Government (interest), sponsors and media". Both categories highlight the effect of the environment on the organizational factors influencing the sporting success in international judo. The environmental effect has

also been identified in other sport specific studies using the SPLISS model as a starting point, such as sprint canoe, athletics and tennis (BROUWERS; SOTIRIADOU; DE BOSSCHER, 2015; SOTIRIADOU; GOWTHORP; DE BOSSCHER, 2013; TRUYENS et al., 2014).

The characteristics of Category 6 "Tradition, history and cultural aspects" have also been discussed in previous studies (BERGSGARD et al., 2007; DIGEL, 2005; GREEN; OAKLEY, 2001; HOULIHAN; GREEN, 2008). Moreover, this category confirmed the 'virtuous-cycle-of-sport' concept in judo, where role models inspire individuals to dedicate themselves to one sport. Some of these individuals also become idols, who in turn continue to inspire others to engage in the sport, thus forming a cycle between the sport participation and high-performance sport (GRIX; CARMICHAEL, 2012; VAN BOTTENBURG, 2002). In terms of cultural issues, every country has some characteristics that encourage the development of high-performance athletes in a sport like judo. This "high-performance sport culture", in which the sharing of certain values causes positive (or negative) processes, is becoming legitimized and accepted as decisive factor in achieving international sporting success (BERGSGARD et al., 2007; DIGEL, 2005; GREEN; OAKLEY, 2001; HOULIHAN; GREEN, 2008).

With regards to Category 9, in particular with the sponsors and media, the authors of the SPLISS model affirm the existence of a tenth pillar, relating to the influence of the media and sponsors on the development of sport in a country (DE BOSSCHER et al., 2006, 2015a). However, it was not included in the model because this environmental factor cannot be directly influenced by sport policies. According to Bayle and Robinson (2007), sport organizations can frequently adopt a strategy for establishing partnerships so as to enable the achievement of the desired objectives. In judo, the government (state influence), the private sector (through sponsorships) and the media were identified as potential partners to the development of a sport in different countries. On the other hand, the identification of this category in the interviews suggests a dependency of the National Judo Organizations through the interest from governments, sponsors and media on the investment of judo in a country. And probably, the investment decisions are influenced by tradition, history and cultural aspects of judo in a country. This dependence of governments or national agencies was also identified in athletics (TRUYENS et al., 2014, 2015), and seem to be a characteristic of the high-performance systems on a sport-specific level.

In addition to their specific debates, these two categories also confirmed the relevance of Systems Theory in the analysis of high-performance systems. As a reminder, in Systems Theory, the inputs/resources are financial resources, material resources and human resources and the processes are actions needed to achieve the outputs / results desired by the system. The environment concerns the social, cultural, political and economic aspects of a country influencing other systemic elements (CHELLADURAI, 2009). The categories that derived from this research fit well in this systemic model, as is represented graphically in Figure 10. This is reflected in the “Judo Organizational Factors Influencing the International Sporting Success”, which stands for JUDO-OFIISS model.

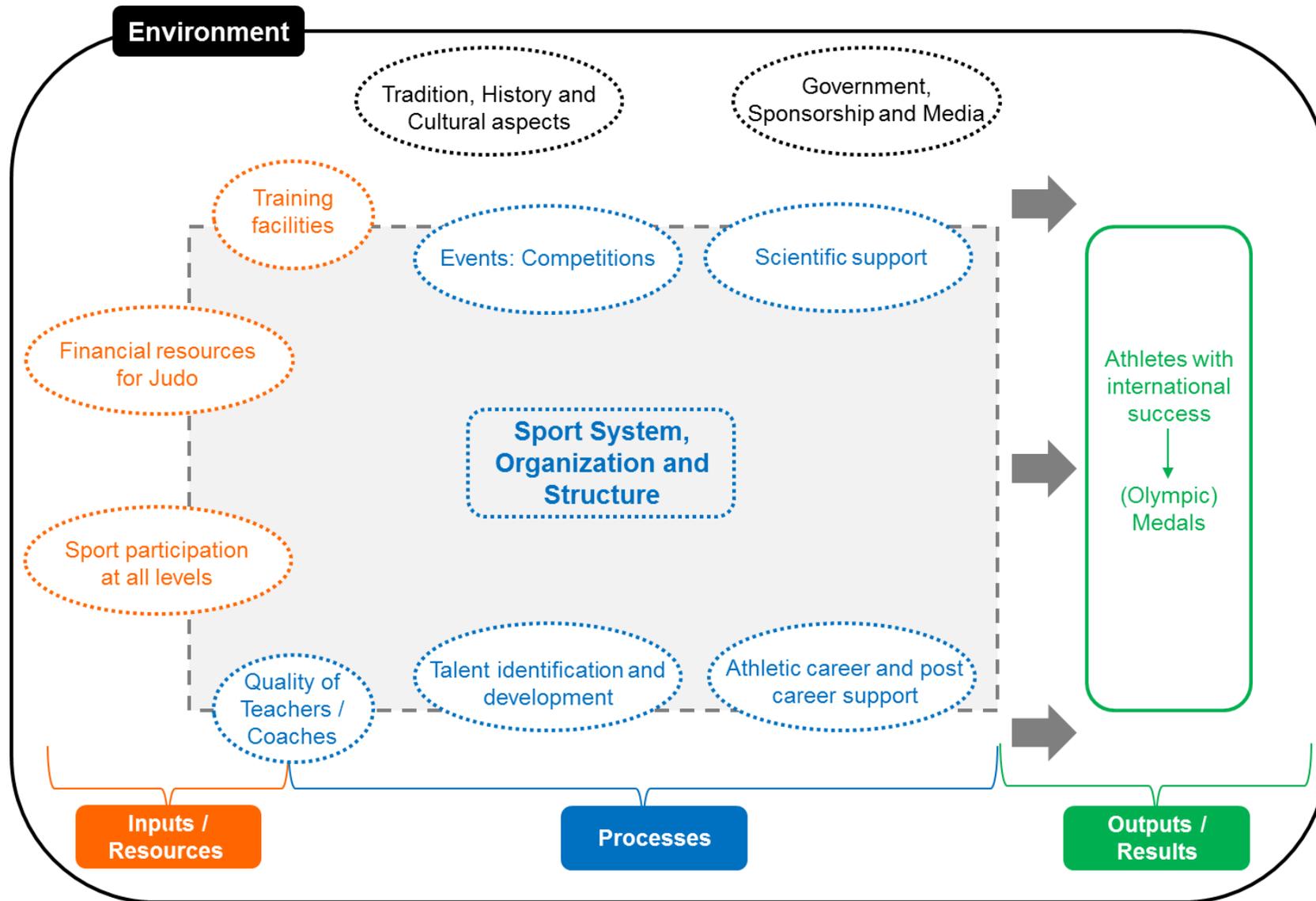


Figure 10: Judo Organizational Factors Influencing the International Sporting Success - JUDO-OFIISS.

Despite complexities inherent in high-performance sport systems (ANDERSEN; HOULIHAN; RONGLAN, 2015a), based on the concepts of Systems Theory (CHELLADURAI, 2009), the categories can be interpreted as follows. The categories 2 "Sport participation at all levels", 3 "Financial resources for Judo" and 8 "Training facilities" were qualified as the system Inputs / Resources (orange colour) because these categories involve human, financial and material resources. The categories 1 "Sport system, organization and structure", 4 "Quality of teachers and coaches"<sup>4</sup>, 5 "Events: competitions", 6 "Athletic career and post-career support", 10 "Talent identification and development", and 11 "Scientific support" were qualified as Processes (blue colour). Somehow, the Category 2 "Sport participation at all levels", is mixed; it could be integrated both in the inputs (absolute number of practitioners) as in the processes (quality athletes). As the subcategory 2.1 "Absolute number of Judo players" had the largest number of text elements (among all subcategories), it was decided to maintain the Category 2 in the inputs. Categories 6 "Tradition, history and cultural aspects" and 9 "Government (interest), sponsors and media" were the Environmental (black colour), as these categories involve aspects that may be present in each country. Finally, the existence of athletes who have achieved international success, and who won medals in international competitions, particularly Olympic medals, were defined as the Outputs / Results (green colour).

Category 1 "Sport system, organization and structure" may be considered the heart of the system configuration presented in Figure 10. The success of the sport system will depend on its management, its ability to raise funds and on the essential processes to obtain the desired results (CHELLADURAI, 2009; DE BOSSCHER et al., 2011; LYLE, 1997). In the perspective of professional sport management, consistent with the current context of high-performance sport (O'BOYLE, 2014; PIRES; SARMENTO, 2001; ROBINSON, 2012), the high-performance judo system and its organizations must not only obtain resources but also promote resources in the environment in which they operate.

From this point of view, it is essential to define the role of each organization involved with judo in a country (including clubs, associations and regional federations)

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<sup>4</sup> The quality of teachers and coaches can be interpreted as a (human) resource or as the result of processes, thus it is located between the inputs and processes. As the interviews portrayed the quality of these professionals as a process output, its colour stayed blue, thus belonging to the procedural elements.

and integration and communication among them has to be encouraged (DE BOSSCHER et al., 2006; GREEN; OAKLEY, 2001). In this way, the development of the system will be strengthened, since all judo organizations in a country become "a whole" performing common objectives. As mentioned, partnerships can be established to provide the system with higher chances of success, not only with governments and companies, but also with other systems including the educational (schools and universities) and the army (BAYLE; ROBINSON, 2007; DIGEL, 2005). In addition, long-term management actions can achieve positive milestones, involving the formation of role models and results achieved, among other factors. In the long run, positive stories diffuse knowledge that is generally adopted by new generations and is legitimised as time passes by (HOFSTEDE, 1991; SCHEIN, 1984), the latter happens through the creation of a sporting culture and through the positive environmental influences on the judo high-performance systems.

The model was developed from the content analysis in the interviews from individuals that act directly on the high-performance international judo. For its use in other sports or in paralympic spots, adaptations is necessary, mainly because of the categories related to the specific judo characteristics. The results suggest that the research at sport specific level will identify specific and relevant characteristics in their sport policies or in their sport systems.

#### **4.4 Phase 1 Considerations**

Base on the opinion of 33 individuals (athletes, coaches, performance directors and experts 11 countries), the results of Phase 1 identified 44 subcategories grouped into 11 categories and were considered to be the organizational factors influencing sporting success in international high-performance judo and their dimensions. It was verified that the results are similar to the other studies and models, which had the purpose of investigating sport policies and high-performance sport systems, especially the SPLISS model pillars. However, judo has specific characteristics (such as the importance of "sport participation at all levels", the influence of tradition, history and cultural aspects" and "government (interest), sponsors and media") that influence the organizational factors of international sporting success. Moreover, environmental

factors that influence the development of judo in different countries and consequently, the pursuit of international success were identified.

The configuration of the 11 categories in relation to System Theory's elements (input/resources, processes, outputs/results and environment) enabled the JUDO-OFIISS model, which can be considered to be a basis for decision-making and the development of the strategic planning of high-performance judo. It can further be considered to be a parameter to identify policies or systems and policy weaknesses related to judo in national or regional contexts. More conclusions regarding these results will be presented in the next phases of this research.

Future research can also contribute to overcoming some limitations found in this phase. Moreover, it can deepen the understanding of the organizational factors influencing the international sporting success in high-performance judo by searching for other possible organizational factors, for instance, or by improving the elucidation of the factors identified. Another possibility for future research is comparing the results found with judo in research using similar methodological approach, but in other sports.

## **5. PHASE 2 – Questionnaire development**

Following the Sequential Exploratory Design (CRESWELL; PLANO CLARK, 2011), the qualitative results from the first phase will be validated through statistical testing on a larger sample of individuals in a subsequent quantitative phase. To perform this “generalization”, Phase 2 is concerned with the development of a quantitative instrument (questionnaire) based on the results from Phase 1.

There are no scientific principles that guarantee an ideal questionnaire. Nevertheless, some guidelines contribute to the construction and the decrease in errors that may compromise their effectiveness (MALHOTRA, 2010). The process of questionnaire development involves five steps: the definition of its goals and its research purpose, decisions regarding the question format and the scales that will be used, the wording of the questions or items, the evaluation by experts and pilot testing (LI; PITTS; QUARTERMAN, 2008).

All steps are described below. Regarding the experts' evaluation and pilot testing, the Content Validation procedure was used (ALEXANDRE; COLUCI, 2011; HAYNES; RICHARD; KUBANY, 1995) to discern the semantic / adequacy and relevance / importance of the questionnaire items developed from the results of Phase 1. The Coefficient of Content Validity (CCV) (HERNÁNDEZ-NIETO, 2002) was also used to measure the evaluations performed by the experts.

### **5.1 Questionnaire Development**

The questionnaire development started from its purpose and the definition of the type of scale. In this research, the questionnaire development will enable the generalization, or the validation of the qualitative results identified in Phase 1 for a larger sample of athletes, coaches, managers and experts involved in high-performance judo. For a consistent generalization of the Phase 1 results, decisions must be made regarding the format of the scales to be used. The scales enable the responses collected from a sample of individuals to be transformed into a numeric format (SKINNER; EDWARDS; CORBETT, 2015).

There are four main types of scales: nominal, ordinal, interval and ratio. To measure opinions on a particular subject, the use of the interval scale is recommended (VEAL; DARCY, 2014). Following the guidelines by Malhotra (2010), among the

options provided by various interval scales, the Likert scale was chosen, as this type of scale makes it possible to measure the degree of agreement or disagreement on a number of items. Although there is not a great amount of consecrated research, individuals' opinions on a certain subject suggests a range of answers between five and nine options. The range should lead the variability of answers, thus there is no Likert point scale better than the other. Therefore, it was decided to use a Likert seven-point scale.

After defining the purpose of the questionnaire and the definition of its scale, the wording of the question or items was started. To organize the type of information that was generated by the individuals' answers, the questionnaire was divided into two parts: "General Data" and "Organizational Factors".

The "General Data" part comprised the research objectives, statement of informed consent and questions about the sample's profile, such as age, gender, age at which they began judo training, sporting level achieved and educational background / labour information (17 questions for athletes and 22 for coaches, performance directors, and experts).

The "Organizational Factors" section was based on one guiding question: "What are, in your opinion, important factors in organizational terms for nations to be successful in international judo competitions?"<sup>5</sup> This question was followed by 52 items for which the individuals had to choose options on a 7-point Likert scale, ranging from "not important" to "very important", with 4 as a midpoint value. This range is adequate to validate the importance of a specific issue (BRUNER II, 2009), in this case, the organizational factors influencing international sporting success in high-performance judo.

The 52 items in the "Organizational Factors" section were developed based on the 44 subcategories identified in Phase 1 of this research and on the 5 topics regarding what is considered success in international high-performance judo (e.g. winning medals in the main international events, medals in the Olympic Games, the existence of athletes of high technical ability who participate in events in an international context and athletes who qualify for the Olympic Games). Each subcategory was transformed into one item (and if necessary into more).

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<sup>5</sup> It was explained in the questionnaire that sporting success is considered as: winning medals in the main international events, Olympic medals won, success athletes with high technical ability, Olympic athletes and medals won at major international Judo events.

The wording of the items influences individuals' answers (MALHOTRA, 2010). Therefore, a number of recommendations were taken into account in the wording of the items, such as simple language, objectivity, one topic per item, etc. (LI; PITTS; QUARTERMAN, 2008). For each item the letter "I" and a subsequent number was awarded. The transformation of the subcategories into items is shown in Appendix 4.

The full questionnaire was named "Organizational factors influencing the international sporting success in high-performance judo" (Appendix 5). The processes related to the questionnaire evaluation by experts and its pilot test are described below.

## **5.2 Questionnaire validation procedures**

The evaluation by experts and pilot testing were part of the last stage of the questionnaire development. The methodological procedure of Content Validation was used to validate the questionnaire based on the experts evaluation. This is a non-statistical and qualitative validation process (ANDREW; PEDERSEN; MCEVOY, 2011; DEVELLIS, 2012; PASQUALI, 2010; ZAMBALDI; COSTA; PONCHIO, 2014) that may involve, among other functions, two types of evaluation: semantic / adequacy and relevance / importance (CARVALHO et al., 2014; SANTOS; SIMÕES, 2009). The semantic / adequacy evaluation (also called face validation) is the evaluation of the items' wording, considering its application to the targeted population. The evaluation of the relevance or importance is the evaluation of the relevance of the questionnaire items to the research objective (DEVELLIS, 2012).

About experts, according to the literature the Content Validation should be conducted researchers or possible participants in the sample who are often called experts or judges (ANDREW; PEDERSEN; MCEVOY, 2011; DEVELLIS, 2012; ZAMBALDI; COSTA; PONCHIO, 2014).

### *5.2.1 Expert sample/judges*

The selection of experts who performed the role of judges in the Content Validation procedures followed two criteria. The first criterion was their knowledge of judo and its international high-performance context. The second was their experience in research procedures and knowledge in relation to the population that was

questioned, in this case athletes, coaches, performance directors and experts involved in high-performance judo.

There are controversies in the literature concerning the ideal number of experts needed to conduct an expert Content Validation, which can range from 5 to 10 (ALEXANDRE; COLUCI, 2011; HAYNES; RICHARD; KUBANY, 1995; LYNN, 1986). According to Grant and Davis (1997) the number it is not the main issue, these authors recommend that the researcher must take the characteristics of the study into account, these being the education, qualification, and availability to choose the experts. Based on their education and experience, six experts were considered qualified for the Content Validation of the research questionnaire, their brief profile can be seen in Table 9.

Table 9: Brief profile of the six experts who participated in the Content Validation

<i>Expert</i>	Education and activities in Judo	Experience
1	PhD and research / international publications involving high performance Judo	12 years
2	PhD and research / international publications involving high performance Judo	08 years
3	PhD and research / international publications involving high performance Judo	08 years
4	PhD and research / publications related to the validation of research instruments	08 years
5	Master and grassroots Judo	20 years
6	Master and high performance Judo – Brazilian teams (Olympic medallist)	30 years

### 5.2.2 Procedures

All experts received an invitation-letter by email that contained information about the research purpose, background information about the model that was used to develop the questionnaire and the questionnaire itself. Furthermore, it contained the brief results of Phase 1 and guidelines on the procedures as part of this Content Validation process.

The experts were asked to: a) perform the semantic / adequacy and relevance / importance evaluation of the 52 items in the “Organizational Factors” section; b) to answer the questionnaire, which served as a pilot test; c) form their final opinion about the questionnaire.

For the semantic / adequacy evaluation, a column entitled 'Semantic' was included next to each item, where the experts evaluated if the one by one wording was understandable and adequately interpretable for athletes, coaches, performance directors and experts of judo. The experts evaluated the items' semantic / adequacy in accordance with the scale: (1) Extremely inappropriate, (2) Inappropriate, (3) Neutral, (4) Appropriate, or (5) Extremely appropriate.

For the evaluation of the relevance / importance, a column entitled 'Relevance' was also included next to each item, where the experts could evaluate its relevance / importance in relation the research objective one-by-one. The experts evaluated the items' relevance in accordance with the scale: (1) Extremely irrelevant (2) Irrelevant, (3) Neutral, (4) Relevant, or (5) Extremely relevant.

A 15-day period was determined after receiving the letter for the experts to perform the Content Validation procedures and to return the evaluation of the semantic / adequacy and of the relevance / importance of the questionnaire. At this deadline, it was also asked to experts to return the completed questionnaire answered (pilot test) and to return their final opinions on the questionnaire. The final version of the questionnaire was re-sent to the experts for a final check.

### 5.2.3 Data analysis

According to the literature, descriptive statistics and/or specific indexes can be used for the measurement of expert evaluation in a content validation process (ALEXANDRE; COLUCI, 2011; HAYNES; RICHARD; KUBANY, 1995; PASQUALI, 2010). As previously stated, In order to measure the six experts' content validation, the average, standard deviation and the Coefficient of Content Validity (CCV) were used.

The CCV is an index to quantify and interpret the judgment of items carried out by a group of experts on a subject (HERNÁNDEZ-NIETO, 2002). The coefficient for each item ( $CCV_i$ , step two in Figure 11) is calculated by the average values ( $A_{xi}$ , step one in Figure 11) divided by the maximum value of the scale used for the expert evaluation ( $V_{max}$ ). The total CCV ( $CCV_t$ , step four in Figure 11) is given by the sum all  $CCV_i$  divided by the number of items in the instrument items ( $N$ ) and subtracting the Standard Error ( $SE$ , step three in Figure 11) of the expert polarization. The  $SE$  is

calculated by dividing 1 and the absolute number of experts raised to the power equal of the absolute number of experts.

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(1) Average calculation of each item

$$A_{xi} = \frac{\sum_{i=1}^e xi}{E_x}$$


---

(2) CCV calculation for each item

$$CVCi = \frac{A_{xi}}{Vmax}$$


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(3) Standard Error calculation for expert polarization

$$SE = \left(\frac{1}{E}\right)^E$$


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(4) Total CCV calculation

$$CVCt = \frac{\sum CVCi}{N} - EP$$


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Figure 11: The Coefficient of Content Validity (CCV) calculations process (HERNÁNDEZ-NIETO, 2002).

The CCV was calculated for the semantic / adequacy and for the relevance / importance of each item. The total CCV was calculated for semantic / adequacy and to relevance / importance. The CCV values must be greater than 0.80 to consider a Content Validation to be positive (HERNÁNDEZ-NIETO, 2002). The average, standard deviation and CCV were conducted in the Microsoft Office Excel 2013 software.

### 5.3 Results

Based on the experts' content validation, the average, standard deviation and CCV for each item were calculated, as well as the total CCV for the "Organizational Factors" questionnaire section. The results are presented in Table 10.

Table 10: Average, Standard Deviation and CCV of semantic / adequacy and relevance / importance of each item of the questionnaire.

Items	Evaluation					
	Semantic / Adequacy			Relevance / Importance		
	Average	SD	CCV	Average	SD	CCV
I1	4.67	0.47	<b>0.93</b>	4.83	0.37	<b>0.97</b>
I2	4.83	0.37	<b>0.97</b>	3.83	1.34	<b>0.77</b>
I3	4.17	1.07	<b>0.83</b>	4.17	1.07	<b>0.83</b>
I4	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I5	4.67	0.47	<b>0.93</b>	4.33	1.49	<b>0.87</b>
I6	4.67	0.47	<b>0.93</b>	4.67	0.75	<b>0.93</b>
I7	3.67	1.60	<b>0.73</b>	4.83	0.37	<b>0.97</b>
I8	4.67	0.47	<b>0.93</b>	5.00	0.00	<b>1.00</b>
I9	3.50	1.50	<b>0.70</b>	4.83	0.37	<b>0.97</b>
I10	3.67	1.60	<b>0.73</b>	4.67	0.47	<b>0.93</b>
I11	3.83	1.34	<b>0.77</b>	5.00	0.00	<b>1.00</b>
I12	4.83	0.37	<b>0.97</b>	4.83	0.37	<b>0.97</b>
I13	4.33	1.11	<b>0.87</b>	5.00	0.00	<b>1.00</b>
I14	4.33	0.75	<b>0.87</b>	4.67	0.75	<b>0.93</b>
I15	4.50	0.76	<b>0.90</b>	5.00	0.00	<b>1.00</b>
I16	4.17	1.46	<b>0.83</b>	4.67	0.47	<b>0.93</b>
I17	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I18	3.50	1.50	<b>0.70</b>	3.67	0.80	<b>0.73</b>
I19	4.67	0.47	<b>0.93</b>	4.67	0.47	<b>0.93</b>
I20	4.50	0.76	<b>0.90</b>	4.83	0.37	<b>0.97</b>
I21	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I22	4.17	1.46	<b>0.83</b>	5.00	0.00	<b>1.00</b>
I23	4.00	1.41	<b>0.80</b>	5.00	0.00	<b>1.00</b>
I24	4.67	0.47	<b>0.93</b>	4.67	0.47	<b>0.93</b>
I25	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I26	4.33	1.11	<b>0.87</b>	5.00	0.00	<b>1.00</b>
I27	4.50	0.76	<b>0.90</b>	4.67	0.75	<b>0.93</b>
I28	4.50	0.76	<b>0.90</b>	4.50	1.12	<b>0.90</b>
I29	4.33	0.75	<b>0.87</b>	4.17	1.07	<b>0.83</b>
I30	4.00	1.15	<b>0.80</b>	5.00	0.00	<b>1.00</b>
I31	4.00	1.15	<b>0.80</b>	3.83	1.67	<b>0.77</b>
I32	4.33	0.75	<b>0.87</b>	4.33	1.11	<b>0.87</b>
I33	4.00	1.15	<b>0.80</b>	5.00	0.00	<b>1.00</b>
I34	4.00	1.41	<b>0.80</b>	4.17	1.46	<b>0.83</b>
I35	4.50	0.76	<b>0.90</b>	4.83	0.37	<b>0.97</b>
I36	4.50	0.76	<b>0.90</b>	4.33	1.11	<b>0.87</b>
I37	4.33	0.75	<b>0.87</b>	4.17	1.07	<b>0.83</b>
I38	4.50	0.76	<b>0.90</b>	4.67	0.47	<b>0.93</b>
I39	4.50	0.76	<b>0.90</b>	2.83	1.21	<b>0.57</b>
I40	4.17	1.07	<b>0.83</b>	4.33	1.11	<b>0.87</b>
I41	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I42	4.83	0.37	<b>0.97</b>	4.67	0.47	<b>0.93</b>
I43	3.83	1.34	<b>0.77</b>	4.67	0.47	<b>0.93</b>
I44	4.33	1.11	<b>0.87</b>	4.33	0.75	<b>0.87</b>
I45	3.33	1.11	<b>0.67</b>	4.17	1.07	<b>0.83</b>
I46	3.17	1.34	<b>0.63</b>	3.33	1.49	<b>0.67</b>
I47	4.50	0.76	<b>0.90</b>	5.00	0.00	<b>1.00</b>
I48	4.50	0.76	<b>0.90</b>	4.83	0.37	<b>0.97</b>
I49	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I50	4.83	0.37	<b>0.97</b>	4.83	0.37	<b>0.97</b>
I51	4.83	0.37	<b>0.97</b>	5.00	0.00	<b>1.00</b>
I52	4.50	0.76	<b>0.90</b>	4.83	0.37	<b>0.97</b>

The total CCV for the semantic / adequacy was 0.87 (CCVi average equal to 0.87 and SE equal to 0.000021). The total CCV for the relevance / importance was 0.92 (CCVi average equal to 0.92 and SE equal to 0.000021).

Regarding semantic / adequacy, in general, 44 (84%) items had a CCV greater than 0.80, 28 (54%) above 0.90 and 16 (31%) between 0.90 and 0.80. The items I7, I9, I10, I11, I18, I43, I45, and I46 had a CCV that was less than 0.80. These items that had CCV below 0.80 with respect to the semantic / adequacy were corrected and were changed according to the experts' indications. The corrected items were re-sent to the experts for a final consultation. This procedure ensures the clarity of the items and avoids ambiguity for the respondents when filling out the questionnaire (CARVALHO et al., 2014; SANTOS; SIMÕES, 2009).

Regarding relevance / importance, 47 (90%) items had a CCV score above 0.80, 17 (32%) items with 1.00 CCV, 20 (38%) having a CCV between 1.00 and 0.90, 10 (19%) between 0.90 and 0.80. A CCV inferior to 0.80 regarding relevance was identified in the following items: I2 – “Technical quality (in judo) of young judo athletes (up to 18 years of age) in the country”; I18 - “Experience in competitions, competing”, I31 - “Promotion/transition of judokas from the basic level (under-18, under-21, and under-23) to the national adult teams”; I39 - “Neighbouring countries that have a good athletic tradition in international judo (because this facilitates international internships and training camps)” and I46 - “Fighting spirit in the country’s population (determination, the desire to win, patriotism , persistence etc.)”. Even though this CCV is less than 0.80, it was decided to retain all the items in the questionnaire’s final version.

The experts also answered the questionnaire and somehow validated the importance of all items. No difficulties were reported in this pilot test. After resending the final version of the questionnaire, the experts had not made other suggestions and the final version was approved.

#### **5.4 Phase 2 Considerations**

This research phase addressed the development of the questionnaire based on the items that were derived from the qualitative results obtained from Phase 1. It can be stated that the questionnaire and its items, both with respect to semantic / adequacy

and relevance / importance, was valid for its purpose, except for a few items that needed rewording. The items with a CCV inferior to 0.80 on the relevance / importance were retained in the final version of the questionnaire for two reasons. First, despite the importance of the experts' content validation, this procedure is just one step in the questionnaire development and in the validation research process (CRESWELL; PLANO CLARK, 2011; HAYNES; RICHARD; KUBANY, 1995). Second, the procedures to be performed in Phase 3 (Exploratory Factor Analysis) will also assess the importance of the items, taking another step towards the validation of the organizational factors influencing the international sporting success in high-performance judo (DEVELLIS, 2012; MALHOTRA, 2010). In addition, the pilot test carried out by experts did not identify possible difficulties in to conduct the questionnaire.

As the questionnaire is unprecedented, there is enough room for further measurement of its properties and their applicability. In addition, this questionnaire can be adapted in the future and pursue other goals after performing the necessary translations and possible adjustments inherent in cross-cultural research (BRUNER II, 2009; CARVALHO et al., 2014; DEVELLIS, 2012; SANTOS; SIMÕES, 2009). These other applications could include comparing different countries by their organizational factors that influence the international sporting success in high-performance judo.

Based on the questionnaire developed in Phase 2, the third phase will use this instrument on a larger sample of athletes, coaches, performance directors and judo experts, constituting one more step in the validation process of the JUDO-OFISS model (Judo Organizational Factors Influencing the International Sporting Success).

## **6. PHASE 3 - Generalisation of the organizational factors influencing the international sporting success in high-performance judo**

The Sequential Exploratory Design final phase objective was to validate the qualitative results that were obtained during the first phase (concerned with the organizational factors influencing international sporting success in high-performance judo). Through quantitative methods, this phase enables the generalization of the results from the first phase and makes the research results more consistent and acceptable (CRESWELL; PLANO CLARK, 2011).

In that regard, an Exploratory Factor Analysis (EFA) and Cronbach's alpha were performed according to the classic methodological quantitative procedures, proposed in the literature to improve the validity and reliability of the research results (CHURCHILL, 1979; CRESWELL; PLANO CLARK, 2011; DEVELLIS, 2012; ZAMBALDI; COSTA; PONCHIO, 2014).

### **6.1 Methodological Procedures**

The realization of a quantitative phase involves an appropriate sample size, an instrument that provides numerical data and appropriate statistical analysis (ZAMBALDI; COSTA; PONCHIO, 2014). As will be described below, a sampling group was defined which allows an appropriate number of capable individuals to answer a questionnaire developed in Phase 2. In the same manner, a number of responses were sought to achieve a reliable Exploratory Factor Analysis (HAIR et al., 2006).

#### *6.1.1 Instrument*

The questionnaire 'Organizational Factors Influencing the International Sporting Success in high-performance judo' was used, which was validated by the Content Validation and a pilot test carried out by six experts in Phase 2. The full version of the questionnaire is shown in Appendix 5.

The questionnaire is divided into two parts: "General Data" and "Organizational Factors". The "General Data" consists of the introduction regarding the study's objective, a statement of informed consent and questions on the respondent's profile (17 questions for athletes and 22 for coaches, performance directors and experts).

The “Organizational Factors” section was composed of one guiding question: “What are, in your opinion, important factors in organizational terms for nations to be successful in international judo competitions?” This question was followed by 52 items developed in Phase 2 in which the individuals had to choose options on a 7-point Likert scale, ranging from “not important” to “very important” and where the midpoint value was 4.

### 6.1.2 *Sample and data collection procedures*

Variables such as time, cost and volume of data generally interfere in the feasibility of transnational studies (DE BOSSCHER et al., 2010). The ideal sample of the Phase 3 would be a larger number of athletes, coaches, performance directors and experts from those countries addressed in Phase 1. However, there was neither the time required, nor the financial resources to cover the necessary operation costs for a data collection of this scope.

Therefore, the third phase uses quantitative data collected from a sample of athletes, coaches, performance directors and experts from one country. Brazil was chosen, due to research convenience and its great history in international high-performance judo (FRANCHINI; TAKITO, 2014). Brazilian judo athletes have consistently won Olympic medals since the Los Angeles Games in 1984 (NUNES, 2013). In the Olympic Games from 1992 to 2012, Brazil had the ninth highest points and is the 4th country to win more medals since the beginning of the world ranking system (INTERNATIONAL JUDO FEDERATION, 2015b). In addition, Brazil is the host of the 2016 Olympic Games. All these positive factors reinforce the relevance of Brazil in the international high-performance judo context and therefore also the adequacy of the Brazilian athletes, coaches, performance directors and experts sample.

The sample was defined by a non-probabilistic approach and by convenience (LI; PITTS; QUARTERMAN, 2008; SKINNER; EDWARDS; CORBETT, 2015; VEAL; DARCY, 2014). Based on the general objectives of this research, the following criteria were used for the selection of athletes, coaches, performance directors and experts: (1) respondents had to be older than 18, (2) respondents had to be part of national

judo teams, or of the high-performance teams among the main Brazilian Judo clubs<sup>6</sup>; or be active participants in the Centre for Excellence in Judo, located in São Paulo.

The Centre for Excellence in Judo is the only permanent training centre for this sport in Brazil. The Centre was built in 1984 and since then has provided a permanent residence for judo athletes from different regions of the country. Additionally, the Centre is used as a place to host and train the Brazilian national teams and main Brazilian judo athletes.

The principal Brazilian Judo clubs were defined based on performance between 2010 and 2014 at the National Interclub Championships (“Grand Prix Nacional Interclubes” for male and female categories). This event is considered the main competition of the Brazilian calendar and has been providing a setting for competition amongst the Brazilian Olympic athletes and from other countries as well<sup>7</sup>. To define the clubs with the best performance from 2010 to 2014, 10 points were awarded to the first place each year, 9 points for second place, 8 points for third, and so on down to 1 point for tenth place (points system according to CONDON; GOLDEN; WASIL, 1999). This is the case for both the male and female competitions. According to this point system, the scores of Brazilian clubs from the 2010 to 2014 National Interclub Championships are presented in Table 11.

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<sup>6</sup> Sport clubs are the basis for Brazilian high-performance sports. The main high-performance athletes who are part of the Brazilian Olympic teams, including Judo, train in sport clubs (MEIRA; BASTOS; BÖHME, 2012; MEZZADRI et al., 2014). The questionnaire preferably addressed high-performance judo athletes and some training partners.

<sup>7</sup> The main Brazilian clubs often hire Olympic athletes from other countries to represent their teams.

Table 11: The points of the Brazilian Judo clubs in the National Interclubs Championship from 2010 to 2014.

	Club	State	2010		2011		2012		2013		2014		Total	Average Year
			M	F	M	F	M	F	M	F	M	F		
1	Minas Tênis Clube	MG	8	8	9	10	7	8	9	10	8	10	87	17.4
2	SOGIPA	RS	9	10	6	7	10	9	7	9	7	8	82	16.4
3	E. C. Pinheiros	SP	-	4	10	9	9	7	10	8	10	7	74	14.8
4	A. D. São Caetano	SP	10	7	7	3	8	-	5	-	0	-	40	8.0
5	Instituto Reação	RJ	-	-	-	-	-	-	8	7	9	9	33	6.6
6	Univ. Castelo Branco	RJ	6	9	8	6	-	-	-	-	-	-	29	5.8
7	C. R. Flamengo	RJ	3	5	2	5	2	10	-	-	-	-	27	5.4
8	São José dos Campos	SP	-	-	-	-	3	5	0	6	6	5	25	5.0
9	A. J. Rogério Sampaio	SP	4	6	5	8	-	-	-	-	-	-	23	4.6
10	A. D. Santo André	SP	1	-	0	-	6	4	6	-	5	-	22	4.4
11	O. A. S. Inhumas	GO	-	-	3	-	0	6	0	4	-	4	17	3.4
12	Sesc Bahia	BA	2	-	4	-	4	-	1	-	3	-	14	2.8
13	Jequiá late Clube	RJ	0	-	1	-	5	-	3	-	1	-	10	2.0
	SESI	SP	-	-	-	-	-	-	-	-	4	6	10	2.0
15	G. R. Barueri	SP	7	-	-	-	-	-	-	-	-	-	7	1.4
	Kiai Kan	SP	-	-	-	4	-	3	-	-	-	-	7	1.4
17	Ass. Judô Queiroz	PI	-	-	-	-	-	-	4	-	2	-	6	1.2
18	F. T. C. Bahia	BA	5	-	0	-	-	-	-	-	-	-	5	1.0
	Palmeiras/Mogi	SP	-	-	-	-	-	-	-	5	-	-	5	1.0
	F.M.E.L São José	SC	-	-	-	-	-	-	-	-	-	3	3	0.6
20	Osasco	SP	-	-	-	-	1	-	2	-	0	-	3	0.6
	Unisul	SC	0	3	-	-	-	-	-	-	-	-	3	0.6

Finally, a number of individuals that were not covered by the sample criteria, but had a high-level performance were included in the sample as 'others'.

Planning for the questionnaire application started based on the established system. Together with the heads of teams/clubs, the best time and day for the questionnaire application was determined, as well as the availability of athletes, coaches, performance directors and experts for participation in this research. The surveys were conducted between January and May 2015 in the training or work places of the athletes, coaches, performance directors and experts. The data collection began with a presentation by the researcher, an explanation of the research objectives and basic guidelines about how to answer the questionnaire. Athletes, coaches, performance directors and experts answered the questionnaire and the researcher was available to clarify any doubts. The individuals who returned completed the questionnaires were entered into a prize raffle offered by the research project as an incentive for participation.

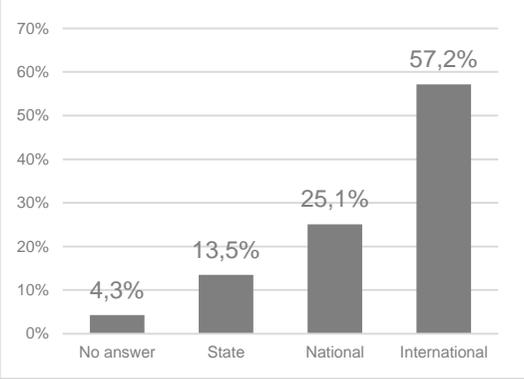
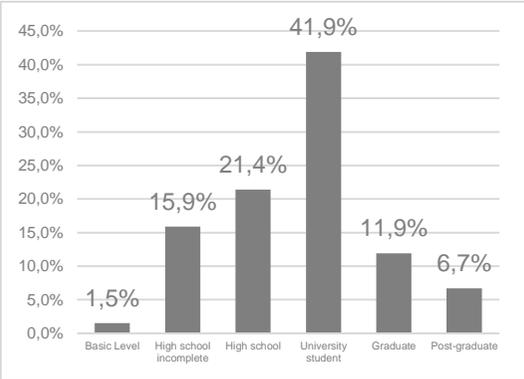
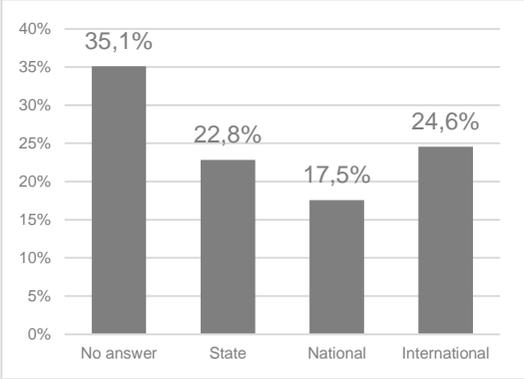
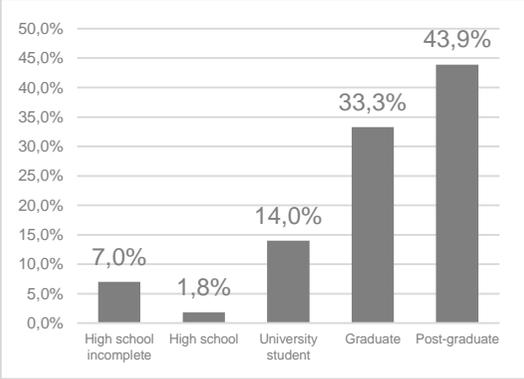
Considering the availability and willingness to participate in research, the sample in Phase 3 consisted of 406 individuals in total, as can be seen in Table 12.

Table12: Sample of individuals participating in Phase 3

	Athletes	Coaches	Performance Directors	Experts	Total
Sub 21 Brazilian team	40	2	1	-	43
Minas Tênis Clube	16	1	-	2	19
SOGIPA	23	4	3	-	30
E. C. Pinheiros	42	3	1	1	47
A. D. São Caetano	27	2	1	-	30
Instituto Reação	30	3	-	1	34
A. D. Santo André	15	3	1	-	19
SESI	33	4	-	-	37
G. R. Barueri	21	6	1	1	29
Osasco	13	2	-	2	17
Centre of Excellence	31	10	-	2	43
Outros	37	16	2	3	58
Total	328	56	10	12	406
	80.79%	13.79%	2.46%	2.96%	100%

The main profile information of the 406 individuals is shown in Table 13. Again, the sample had some imbalances regarding gender, particularly amongst the coaches and performance directors. The educational level is in accordance with other studies investigating these stakeholders (DE BOSSCHER et al., 2015a). Nonetheless, the sample of 406 individuals was qualified, or had had a considerable sporting level to answer the questionnaire, since most of them had international sporting experience.

Table13: Profile information of Phase 3

	Gender		Age (average)	Sporting level	Education
	Male	Female			
<b>Athletes (328)</b>	65.4%	34.6%	22.7 <sup>8</sup> (± 6.5)		
<b>Coaches (56)</b>	91.2%	8.8%	38.3 (± 10.2)		
<b>Performance Directors (10)</b>	100%	-	49.8 (± 11.8)	20.0% State level 80.0% International level	40.0% graduate 60.0% post-graduate
<b>Expert (12)</b>	66.7%	33.3%	34.9 (± 6.6)	-	100% post-graduate (50% PhD) (8% Master) (42% Specialist)

<sup>8</sup> An exception regarding the age was made to 36 athletes who were going to be 17 years old in 2015. They compete in international level.

### 6.1.3 *Data analysis*

The data analysis was divided into two sections. The first consisted of 'preliminary analyses' with descriptive statistics and validation of the statistical requirements needed to perform the second section, which was an Exploratory Factor Analysis (EFA).

#### Preliminary Analysis

The preliminary analysis consisted of a) the analysis of the missing data, b) the descriptive analysis (averages and standard deviation) of the variables, c) the univariate analysis of variance (ANOVA) among the average responses of the 328 athletes, 56 coaches, 10 managers and 12 experts and d) the analysis of statistical requirements, such as normality, homoscedasticity, the existence of linear relationships among the variables, the Kaiser-Meyer-Olkin index (KMO) and the sphericity test (Bartlett's test). According to Hair et al. (2006), the analysis of the statistical requirements for conducting the EFA involves the initial and essential examination of the data and provides a basic understanding of data and relationships among variables.

The analysis of missing data requires the exclusion of variables and individuals that have response rates less than 40% from the analysis. Missing data below 10% may often be ignored, particularly when failures occur in a non-random order (e.g., mistakes that are not specific to a set of questions) (HAIR et al., 2006). The average and standard deviation of each variable provides information on trends and on the variability of the data (MALHOTRA, 2010). ). Furthermore, a univariate analysis of variance (ANOVA) aims to verify the data pattern proper to different groups or populations, particularly with respect to the average (HAIR et al., 2006).

In classical statistics, normality, homoscedasticity (homogeneity of variance) and correlations are considered to be a premise for conducting multivariate analysis (BALBINOTTI, 2005; DEVELLIS, 2012; HAIR et al., 2006). The normality and homoscedasticity may lead to the hypothesis that the correlation matrix of the variables is plagued by multicollinearity. According to Hair et al. (2006), the Kaiser-Meyer-Olkin index (KMO) and the sphericity test (Bartlett's test) are also required to perform an EFA. The KMO index verifies the degree of inter-correlations among the variables and

the adequacy of EFA, whereas Bartlett's Test checks for statistical significance in the correlations between the variables (HAIR et al., 2006). These requirements aim to verify the existence of sufficient correlation among the observed variables which could determine representative factors (COSTELLO; OSBORNE, 2005; FÁVERO et al., 2009; FIGUEIREDO FILHO; SILVA JÚNIOR, 2010).

The correlation among the variables needs to be above 0.30. The KMO can be classified as: 0.90 to 1 is excellent, 0.80 to 0.89 is good, 0.70 to 0.79 is average, 0.60 to 0.69 is reasonable, 0.50 to 0.59 is poor, and 0 to 0.49 is unacceptable (FIGUEIREDO FILHO; SILVA JÚNIOR, 2010). Bartlett's sphericity test indicates the existence of significant correlation when its statistical significance level is below 0.05 ( $p < 0.05$ ) (HAIR et al., 2006).

#### Exploratory Factor Analysis (EFA)

In this research, the subcategories identified in Phase 1, which were also the basis for the items of the questionnaire developed in Phase 2, were subsequently used to conduct an Exploratory Factor Analysis (EFA). EFA is the suggested method when the researcher conducts exploratory research, when a recently developed questionnaire is applied for the first time and when one wants to identify which variables are unidimensional (i.e. which variables measure what they were expected to measure) (DEVELLIS, 2012; HAIR et al., 2006; WILLIAMS; BROWN; ONSMAN, 2012).

EFA's essential purpose is to identify (unobservable) factors through the relationship among the observed/measured variables. In other words, EFA evaluates the interrelationships of variables to search for a set of factors that reflects what the original variables have in common (COSTELLO; OSBORNE, 2005; FIGUEIREDO FILHO; SILVA JÚNIOR, 2010; HAIR et al., 2006).

According to Hair et al., (2006), in addition to the previous statistical assumptions (or requirements) verified in the preliminary analysis (normality, homoscedasticity, the existence of linear relationships among the variables, the KMO index and Bartlett's test), the procedures to perform an EFA involve defining the extraction method of the factors and defining the criteria for the number of factors which will be selected to represent the underlying structure in the data. The factor extraction method is the option that the researcher can choose for defining (extracting) the factors

in the analysis. The principal component factor was chosen as the factor extraction method, since this method provides a summary of the original information (variance) in a minimum number of factors for prediction purposes and is the typical default method of most statistical programs for performing factor analysis. The criterion for discerning the number of factors to extract is derived from the best linear combination of variables, in the sense that the particular combination of the original variables accounts for the variance in the data as a whole more than any other linear combination of variables does. The criterion for the number of factors obtained was to choose those that had eigenvalues greater than or equal to one (latent root criterion), since this criterion holds that any individual factor should account for the variance of at least a single variable if it is to be retained for interpretation.

To provide information that offers the most adequate interpretation of the variables under examination, a rotational orthogonal VARIMAX analysis was applied. The rotational method aims to achieve a simpler and theoretically more meaningful factor solution (HAIR et al., 2006). The communality and factor loadings of variables were also taken into consideration for the interpretation of the factors. Concerning communality, Costello and Osborne (2005) consider common and real values from 0.40 to 0.70. If a variable has a lower communality than 0.40, it does not have a minimal relation with other variables, making the formation of factors improbable. According to Costello and Osborne (2005) and Hair et al. (2006, p. 128), factor loadings between 0.30 and 0.40 are considered to meet the minimum level for factor interpretation. Factor loadings of 0.50 or higher are regarded as significant. In Table 14, the guidelines for identifying significant factor loadings based on sample size can be observed (HAIR et al. 2006, p. 117).

Table14: Guidelines for identifying significant factor loadings based on sample size Hair et al. (2006, p. 117).

Factor loadings	Sample size required for significance
0.30	350
0.35	250
0.40	200
0.45	150
0.50	120
0.55	100
0.60	85
0.65	70
0.70	60
0.75	50

The factors must be analyzed by researchers and be named based on the interpretation of the set of variables that compose it and form a factor (HAIR et al., 2006; MALHOTRA, 2010). If the variables are different, the factor should be identified as undefined or as a factor in general (MALHOTRA, 2010). It is suggested that one variable is not present in more than one factor (HAIR et al., 2006). However, the researcher should use coherent elements to justify the inclusion or exclusion of variables in the analysis of the factors obtained, always taking the factor loadings and communality values of each variable into account (COSTELLO; OSBORNE, 2005; FIGUEIREDO FILHO; SILVA JÚNIOR, 2010).

To measure the reliability of all extracted factors, Cronbach's alpha coefficients for internal consistency were calculated, and values above 0.60 were considered satisfactory (HAIR et al., 2006). Moreover, for all necessary procedures of viability, execution of EFAs, and Cronbach's alpha indices, SPSS for Windows version 20.0 was used.

## **6.2 Results**

### **Preliminary Analysis**

Values between 0% and 1.5% of missing data were identified in the 52 variables. In regard to the response pattern of the 406 individuals in the sample, most of them (403 - 99%) had values between 0% and 9.6% of missing responses. Only three individuals had a missing data pattern above 10% (i.e., 11.5%, 19.2%, and 40.1%). Considering these results, it was decided not to perform the replacement procedure for missing data and maintain the integrity of the data generated from the questionnaire in the respective sample, as recommended by Hair et al. (2006). The analysis of missing data, averages and standard deviations of the responses are shown in Table 15.

Table 15: Description of the Average, Standard Deviation, Missing Data.

Items / Variables	N	Average	Standard Deviation	Missing Data	
				N	Percent
I1	401	6,0	1,2	5	1,2%
I2	401	6,2	1,0	5	1,2%
I3	401	6,0	1,1	5	1,2%
I4	404	6,5	1,1	2	0,5%
I5	402	6,4	0,9	4	1,0%
I6	405	6,5	1,0	1	0,2%
I7	404	6,3	1,1	2	0,5%
I8	405	6,6	0,8	1	0,2%
I9	404	6,5	1,1	2	0,5%
I10	404	6,2	1,0	2	0,5%
I11	403	6,3	1,0	3	0,7%
I12	403	6,5	0,9	3	0,7%
I13	405	6,5	0,8	1	0,2%
I14	405	6,1	1,0	1	0,2%
I15	404	6,2	1,1	2	0,5%
I16	404	6,0	1,1	2	0,5%
I17	402	6,5	1,0	4	1,0%
I18	404	6,6	0,7	2	0,5%
I19	404	6,4	0,9	2	0,5%
I20	404	6,1	1,2	2	0,5%
I21	404	6,6	0,9	2	0,5%
I22	406	6,2	1,0	0	0,0%
I23	404	5,7	1,2	2	0,5%
I24	403	6,4	1,1	3	0,7%
I25	405	6,7	0,7	1	0,2%
I26	406	6,6	0,8	0	0,0%
I27	406	6,2	1,1	0	0,0%
I28	406	6,5	0,8	0	0,0%
I29	406	6,2	1,1	0	0,0%
I30	405	6,1	1,1	1	0,2%
I31	404	6,2	1,1	2	0,5%
I32	405	6,6	0,8	1	0,2%
I33	404	6,3	0,9	2	0,5%
I34	405	6,4	1,0	1	0,2%
I35	406	6,5	1,0	0	0,0%
I36	404	6,4	1,0	2	0,5%
I37	405	6,6	0,9	1	0,2%
I38	406	6,2	1,1	0	0,0%
I39	403	5,8	1,3	3	0,7%
I40	406	5,9	1,3	0	0,0%
I41	406	6,4	1,0	0	0,0%
I42	405	6,0	1,1	1	0,2%
I43	406	5,7	1,4	0	0,0%
I44	403	6,2	1,1	3	0,7%
I45	404	5,7	1,2	2	0,5%
I46	405	6,0	1,3	1	0,2%
I47	406	6,3	1,1	0	0,0%
I48	405	6,6	0,8	1	0,2%
I49	402	6,5	0,9	4	1,0%
I50	403	6,6	0,7	3	0,7%
I51	405	6,6	0,8	1	0,2%
I52	400	6,4	0,9	6	1,5%

The univariate analysis of variance (ANOVA) shows no significant differences in the response patterns among the average responses in the four sample groups (328 athletes, 56 coaches, 10 managers and 12 experts). Statistical  $F$  values with a significance below 0.05 were found in only six (11%) items. This result has enabled

further analysis using the total sample of 406 individuals. The ANOVA results can be found in Appendix 6.

A normal data distribution was not observed for the "Organizational Factors" section. This finding was obtained using the Kolmogorov-Smirnov test (indicated for samples with more than 50 cases). From the perspective of classical statistics, normality is a necessary prerequisite to perform multivariate analysis (BALBINOTTI, 2005; DEVELLIS, 2012; HAIR et al., 2006). However, when data are derived from ordinal variables, such as is the case in this study, (which involve the opinion of something), it is very unlikely or even impossible that they will have normal distributions because normal distribution is unique to continuous quantitative variables (ZAMBALDI; COSTA; PONCHIO, 2014). Indeed, normality tests are rarely used as assumptions of Factor Analyses in social science research (COSTELLO; OSBORNE, 2005; HAIR et al., 2006; HOGARTY et al., 2005; WILLIAMS; BROWN; ONSMAN, 2012). To perform an EFA in a social science research, there must be an exact or approximately exact linear relationship among the variables (multicollinearity) because the objective is to identify sets of interrelated variables (HAIR et al., 2006). The absence of a normal distribution in a data (that involves individual opinions) does not prevent EFA from being performed, but increases type II statistical errors, i.e., decreases the result's statistical power (COHEN, 1992; SHARMA, 1996). Statistical power is significant in multivariate analyses that involve a dependent relationship among the variables (such as the variance and multiple regression analyses), or when the variables are continuous (common in data from the hard sciences and the biological sciences); in these cases, an error of 5% is acceptable. Due to the greater complexity of human behaviour, the adoption of a higher type II error is perfectly justifiable in research that involves individual opinions, making it possible to conduct analyses of interdependence among variables (factor or group analyses), even in the absence of normality (COHEN, 1988; HAIR et al., 2006).

With regard to the presence of homoscedasticity, i.e., a constant error term variance for a set of variables, Levene's test showed that 45 (86%) variables exhibited this characteristic. Correlations with significant levels (less than 0.01) were identified among most of the variables. A small number of variables had a correlation with a significance level between 0.01 and 0.05 and an inexpressive number of variables had a lack of significant correlations. Furthermore, the Kaiser-Meyer-Olkin (KMO) index

and sphericity test (Bartlett's Test) were calculated. The result of the KMO index was 0.94 (classified as excellent), which indicates the adequacy of the correlation matrix among the variables to conduct an EFA. Bartlett's Test had a result of 11046.50 with a significance of less than 0.00.

The results of normality, homoscedasticity (Levene test), correlations matrix, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test can be seen in Appendix 7.

#### Exploratory Factor Analysis (EFA)

After the preliminary analyses that verified the analysis of the statistical requirements, an EFA was performed, as well as the measurement of Cronbach's alpha of each factor extracted. The results are shown in Table 16.

Table 16: Exploratory Factor Analysis results

Items	Subcategories	Factors										Comunalities			
		1	2	3	4	5	6	7	8	9	10				
I25	Funds for the multidisciplinary team	0,75													0,71
I24	Funds for athletes	0,71													0,66
I26	Holistic support for athletes	0,67													0,60
I35	Government interest	0,66				0,31									0,69
I37	Sponsorships	0,61													0,61
I17	Internships and training camps	0,59				0,33									0,70
I47	Support and professional possibilities	0,58		0,48											0,64
I27	Post-career program	0,55							0,33						0,59
I09	Training centres	0,51	0,48												0,70
I36	Media	0,51				0,34									0,60
I34	Applied research (Match Analysis)	0,50				0,37									0,56
I21	International competitions	0,49							0,32	0,32					0,66
I28	Technical and tactical support	0,45													0,56
I41	Professional conditions for teachers and coaches	0,41	0,41			0,35									0,57
I10	Sport System		0,72												0,64
I11	Organization		0,69												0,66
I13	Professional staffs		0,66	0,31											0,72
I16	Communication and Integration among organizations		0,66												0,73
I14	Clear roles of Judo Organizations		0,63						0,32						0,66
I12	Long-term Planning		0,57												0,60
I15	Training programs for teachers and coaches	0,30	0,56												0,66
I06	Quality of teachers in grassroots level		0,54		0,54										0,69
I07	Local spaces for training and practice		0,50		0,39					0,38					0,67
I33	Applied research (technical/tactical, physical training)	0,37	0,45												0,56
I45	History of Judo in the country			0,70											0,63
I43	Popularity			0,68											0,57
I44	Success tradition			0,67											0,60
I42	Role models (idols story)			0,62											0,60
I46	Fighting spirit			0,60											0,64
I40	High performance sport culture			0,47						0,38				-0,44	0,51
I05	Quality of Judo partners				0,77										0,71
I03	Quantity of Judo athletes				0,73				0,31						0,68
I02	Quality of young Judokas				0,71										0,58
I04	General funding	0,48			0,53										0,72
I08	Quality of elite coaches		0,43		0,48										0,63
I29	Competition for selection talents					0,70									0,65
I30	Selection talents process					0,66									0,64
I31	Talents promotion					0,57									0,59
I32	Holistic support for talents	0,44	0,34			0,48									0,66
I19	Competitions at grassroots level (organization)		0,42			0,43									0,55
I49	Complete team in the Olympic Games							0,75							0,69
I50	Medals in World Ranking events							0,70							0,71
I51	Athletes with technical quality in the World Ranking							0,69							0,68
I52	Two athletes in each category qualified for Olympics							0,68							0,62
I48	Olympic medals							0,54							0,64
I23	Competitions at grassroots level (appropriate for ages)								0,60						0,55
I22	National calendar and competition structure		0,33						0,58						0,59
I20	Management Structure		0,35						0,37		0,35				0,62
I38	Host nation effect			0,34						0,52					0,57
I39	Country location			0,36		0,37			0,32	0,48					0,70
I18	Compete				0,34						0,63				0,65
I01	Absolute amount of Judo players				0,40							0,54			0,62
KMO = 0,94 - Bartlett's Test: 11046,506 (Sig. = 0,000) - Eigenvalues		18,14	2,80	2,43	2,25	1,51	1,37	1,19	1,16	1,12	1,05				
Percentage of variance explained		12,63%	11,16%	7,58%	6,79%	6,50%	6,32%	3,85%	3,28%	3,07%	2,32%				
Cumulative %		12,63%	23,79%	31,37%	38,15%	44,65%	50,97%	54,82%	58,10%	61,17%	63,49%				
Cronbach's alpha		0,93	0,90	0,81	0,79	0,82	0,83	0,67	0,69	-	-				

The first six factors can be considered as the most representative. Together, these first six factors contributed to 50.97% of the total variance of the factor model obtained, which was 63.49% of the total variance.

Factor 1 was entitled “High-Performance Sport Climate”; it explained 12.63% of the total variance and had a Cronbach's Alpha of 0.93. It comprises a combination of 14 items (Phase 1 subcategories) from the following categories: 3 “Athletic Career and Post-Career Support”, 4 “Financial Resources for Judo”, 5 “Quality of Teachers and Coaches”, 6 “Tradition, History and Cultural aspects”, 7 “Events: Competitions”, 8 “Training Facilities” and 9 “Governments (interest), sponsors and media”. In summary, as presented in Table 16, Factor 1 showed the following influences to achieve international sporting success:

- Support for athletes (multi-disciplinary, financial, and technical/tactical), in addition to good professional opportunities during their career and preparation for a post-sports career,
- Environmental factors, such as interest from the government, sponsors, and media;
- Participation in international competitions and training camps,
- The existence of training centres and
- Professional conditions for judo teachers and coaches.

Factor 2, “Sport System, Organization, and Structure” comprised six subcategories from the category 1 “Sport System, Organization, and Structure”, in addition to four subcategories: “Training programs for teachers and coaches”, “Quality of teachers at the grassroots level”, “Local spaces for practice” and “Applied research”. The item “Management Structure” may be regarded as belonging to Factor 2, even though its factor loading places it in Factor 7. Factor 2 refers to the relevance of a management structure and the importance of qualified human resources who operate in sport systems. This factor explained 11.16% of the total variance and had a Cronbach's Alpha of 0.90.

Factor 3 was composed of six items related to the category “Tradition, History and Cultural aspects”. It was designated “Tradition, History and Cultural aspects”, with 7.58% of the total variance and a Cronbach's alpha of 0.81. Although their factor loadings position them in Factor 8, the subcategories “Host-nation effect” and “Country location” may also belong to Factor 3. In summary, Factor 3 represented the

environmental facilitators that are present in the particular context of judo in each country and have an influence on attaining international sporting success.

Factor 4, “Resources for International Success”; explained 6.79% of the total variance and had a Cronbach's alpha of 0.79. This factor is composed exclusively of four subcategories “Quality of Judo athletes”, “Quantity of Judo Athletes”, “Quality of young judokas”, and “General funds” with the addition of the subcategory “Quality of Coaches”. Three subcategories may also be part of Factor 4, specifically “Absolute Number of Judo players” (which is in Factor 9), “Quality of teachers at the grassroots level”, and “Local Spaces for Practice” (which are in Factor 2). In summary, Factor 4 showed the influence of financial, human and material resources on achieving international sporting success.

Factor 5, “Sports Talent Development System”, with 6.50% of the total variance explained and a Cronbach's alpha of 0.82. This factor showed the influence of the development of talented athletes in the pursuit of sporting success; it was formed by the subcategories related directly or indirectly to the 10th category of Phase 1 "Talent Identification and Development".

Factor 6 was the last coherent factor. It was composed by five topics associated with international success, i.e. the outputs/results of a high-performance judo system seeking international sporting success. Factor 6 was entitled “International Sporting Success in High-Performance Judo”. It contributed 6.32% of the total variance and had a Cronbach's alpha of 0.83.

Factor 7 may be entitled “Management and Competition Structure”, with 3.85% explanatory variance (Cronbach's alpha of 0.67), and Factor 8, “The influence of competitors and of hosting international events”, with 3.28% explanatory variance (Cronbach's alpha of 0.69). These factors have three and two subcategories, respectively, which limits their interpretation. Factors 9 and 10 had just one subcategory with an expressive and meaningful factor loadings, which undermines their interpretations. However, the variables of the Factors 7, 8, 9, and 10 had factor loadings that enable their interpretation also in the other six first factors.

### 6.3 Discussion

The objective in this phase was to validate the organizational factors influencing international sporting success in high-performance judo. The “Preliminary Analysis” highlighted the high average values of the answers and the absence of significant differences in the pattern of answers from the four groups that formed the sample, and consisted of 328 athletes, 56 coaches, 10 performance directors and 12 experts respectively.

As for the quantitative validation procedures and the verification of the reliability of the research results (CHURCHILL, 1979; CRESWELL; PLANO CLARK, 2011; DEVELLIS, 2012; ZAMBALDI; COSTA; PONCHIO, 2014), the results from the Exploratory Factor Analysis (EFA) permitted the validation of all items (variables) from the questionnaire, resulting in the validation of the JUDO-OFISS subcategories identified in Phase 1. The contribution of Phase 3 is also in accordance with other research on the validation of international sporting success factors, as suggested by the SPLISS authors and to apply this model at a sport specific level (DE BOSSCHER et al., 2010). However, validation is a continuous process (DEVELLIS, 2012), the results presented in this research are methodologically consistent, but there is room for future studies that seek to validate the results in other samples or other sports that are influenced by different contexts.

The total variance explained achieved by the factors was 63.49%, which reflects a satisfactory representation of the results and allowed for the comprehension of the resulting factors (DAMÁSIO, 2012; MALHOTRA, 2010). As a way of explaining the 50.97% out of 63.49% total variance, the six first factors resulting from EFA provided an interesting analysis of the interrelationships among the organizational factors influencing international sporting success in high-performance judo.

Factor 1, “High-Performance Sport Climate” explained 12.63% of the total variance and highlighted the interrelationships among some manageable organizational factors (resources and process) and environment factors. Thus, in addition to confirming the importance of the factors that are manageable in the attainment of international sporting success that were pointed out by other researchers (DE BOSSCHER et al., 2006, 2015a; GREEN; OAKLEY, 2001), Factor 1 also confirmed the influence of - and somehow - the dependency on environmental factors,

these being in this case government interests, sponsors and the media. These results are similar to other studies that have focused the sport policies factors at a sport specific level, such as athletics and tennis (BROUWERS; SOTIRIADOU; DE BOSSCHER, 2015; TRUYENS et al., 2014, 2015). In each country, there are facilitators or inhibitors that have influenced the performance of national organizations (BAYLE; ROBINSON, 2007). In this research project, the facilitators or inhibitors have affected the judo development to a certain degree that is not directly manageable by national judo organizations. This finding was also in line with Houlihan (2013), who pointed to the impact of political and commercial factors as well (besides social and cultural aspects) in high-performance sports management. On the other hand, an effective management of a high-performance sports system may partially overcome the influence of these environmental factors (DE BOSSCHER et al., 2006). Sports organizations must take the role of environmental factors into consideration in their high-performance systems (BROUWERS; SOTIRIADOU; DE BOSSCHER, 2015; DIGEL, 2005) and seek positive alliances so as to develop a sport in a country (BAYLE; ROBINSON, 2007). All these findings are summarized in Factor 1's items of this third research phase.

It was not by chance that the Factor 2 denominated "Sport systems, organization and structure" obtained the second highest explanatory value in the total variance: 11.16%. This factor portrayed the importance of processes connected with high-performance sport systems management and the management of the system itself, as pointed out by other studies (CHELLADURAI, 2009; SOTIRIADOU, 2013). Factor 2 confirmed the perspective that sports organizations need to become more and more professional and suitable to the current high-performance context (O'BOYLE, 2014; PIRES; SARMENTO, 2001; ROBINSON, 2012). Similarly, the set of items which composed Factor 2 pointed out the necessity for systems to exist (organized and integrated) that promote a clear pathway, so that individuals turn out to be high-performance athletes and that therefore international sporting success can be achieved.

Factor 2 highlighted the importance of teachers who work in grassroots judo. In accordance with what was already mentioned in Phase 1, the role of teachers in judo is essential for the athletes to achieve a higher technical and tactical development, since these professionals are in charge of all the judo practitioners' technical and

tactical learning (MADURO, 2012; NUNES, 2013). As appeared in the Factor 2 results, it can be stated that judo development in a country needs local space (facilities) for its high quality practice, teachers and coaches. Moreover, it needs research to be applied to the judokas' learning and to the technical/tactical preparation of a country.

In agreement with other authors (ANDERSEN; RONGLAN, 2012a; BERGSGARD et al., 2007; DIGEL, 2005; GREEN; HOULIHAN, 2005), Factor 3 confirmed the influence of environmental factors related to tradition, history and cultural aspects in high-performance sport development. Factor 3 explained 7.58% of the total variance and was formed by the subcategories related to historical factors, results, role models and the popularity that judo has in a country. There is the idea that "role models" are premises for a good development of a sport in a country, i.e. successful examples from the past are seen as successful "formulas" in the present (ANDERSEN; RONGLAN, 2012a). Factor 3 also meets the opinion of authors that report a strong influence of "Traditional, history and cultural aspects" in judo development (FRANCHINI; DEL'VECCHIO, 2007; NIEHAUS, 2006; SAEKI, 1994; SATO, 2013; VILLAMÓN et al., 2004).

Despite the fact that the Factor 3 items are not easily manageable, they must be regarded as a part of the judo development in a country. It will be up to the national judo organizations to explore the potential that the successful athletes have concerning the promotion of judo to the population. It would be a form of sport marketing plan, as has been suggested by some studies (FERRAND; MCCARTHY, 2009; FERRAND; PAGES, 1999).

Factor 4 highlighted the influence of resources in reaching international sporting success in high-performance judo. These resources concern the existence of financial resources, the availability of facilities for practice, the capability of teachers and coaches to provide better conditions for judo development in a country and better possibilities for the athletes' development. In accordance with other studies, Factor 4 identified a relation between the superior existing resources in high-performance sports policies and the existence of ideal conditions for the athletes' development (DE BOSSCHER et al., 2006; HOULIHAN; GREEN, 2008; SOTIRIADOU; DE BOSSCHER, 2013).

Factor 5 validated the influence of processes related to the identification and development of sport talents. The development of talented individuals is considered a

crucial factor to achieve positive results in international high-performance sport (ANDERSEN; HOULIHAN; RONGLAN, 2015b; BÖHME, 2011; DIGEL, 2002a; RÖGER et al., 2010; VAEYENS et al., 2009). As a smaller number of textual elements was identified in the first phase and in spite of the 6.50% total variance explanation, a “sports talent development system” may be a differential element in the high-performance judo systems’ success and also in attaining international sporting success.

Factor 6, with an explanation of 6.32%, makes the established items about international sporting success in high-performance judo, acceptable and important for the sample that participated in Phase 3. The results to be attained by a system are relative, depending on different contexts and stakeholders’ interests (CHELLADURAI, 2009). On the other hand, phase 3 sample confirmed that athletes with international success and (Olympic) medals are considered the ‘outputs’ of high-performance systems, and this finding is also considered by other authors (BERGSGARD et al., 2007; DE BOSSCHER et al., 2006, 2015a; GREEN; OAKLEY, 2001; HOULIHAN; GREEN, 2008; MADELLA; BAYLE; TOME, 2005; SHIBLI et al., 2012).

In Phase 1 of this research, it was possible to create a clear division of system elements (inputs/resources, process, environment and outputs/results). However, in Phase 3, this division was not possible, or at least this did not occur in a clear way. On the other hand, there has been a validation of items linked to all system elements. The combined items in all factors elucidate that the success in high-performance judo systems depends on the combination and synergy of resources, processes and the environment. This finding is a basic principle of systems theory (CERTO, 2013; CHELLADURAI, 2009; MAXIMIANO, 2006).

In athletics, Truyens et al. (2014) similarly suggested a combination of resources and first-order capabilities that are important in the pursuit of competitive advantage in the international context. The factors resulting from this third phase seem to be similar, i.e. the need for a combination of organizational factors - which may be different in each country - seem to be an important finding to achieve international sporting success in high performance judo. In this sense, for a consistent development of high-performance judo in a country, it is necessary to take not only all the organizational factors but also the existing interrelationships among them into consideration.

## 6.4 Phase 3 Considerations

Phase 3 validates the results found in the first qualitative phase. Thus, the categories and subcategories identified in Phase 1 were validated making the JUDO-OFIISS model more consistent and acceptable.

The Exploratory Factor Analysis identified the existing interrelationships among the organizational factors that influence international sporting success in high-performance judo, despite they not accompanying in an accurate way, the system elements (inputs/resources, process, environment, outputs/results).

As already mentioned, one of the limitations of this third research phase was that the follow up to phase 1 did not take place in an international context. This leaves room for future research. As such, one should be careful with generalizing the organizational factors identified in Phase 1 to other countries. On the other hand, from statistical arguments it can be assumed the results of the factor analysis would be similar in other countries, as the reliability and internal consistency of the third phase results were good. As the main consideration, it is possible to confirm that the search for international sporting success probably depends on the existence of all factors and the interrelationships among them, which will probably be little different in each country and depend on the countries context.

Future research may deepen the understanding on the organizational factors, by performing the same procedures carried out in this phase in different countries. Despite the factor loadings indicate a certain importance of the items, another suggestion concerns the application of procedures involving confirmatory factor analysis or structural equation modelling in order to identify clearly and more consistently the importance or the “power” of each of the organizational factors that were identified in this research.

As already mentioned, one of the limitations of this research was not to the procedures of this third phase in an international sample, as the first phase

## 7. FINAL CONSIDERATIONS AND CONCLUSIONS

Following researchers' and managers' interest in the search for explanations for the international sporting success achieved by some countries and not by others, the objective of this research was to identify factors at an organizational level that influence the sporting success in international high-performance judo. Despite the fact that the identification was based on the opinions of individuals that act on an international level and its validation was based on a sample consisted by judo athletes, coaches, performance directors and experts from one country, it can be assumed that the organizational factors identified are coherent with the current international high-performance judo and with the recent studies about critical factors for success and high-performance sport policies.

The use of a mixed method research design was helpful, as it provides researchers with a greater consistency and credibility of the results identified in a research project. Accordingly, to meet the objective of this research, a Sequential Exploratory Design was used, it involved an initial phase that collected and analysed qualitative data, followed by a second intermediate phase related to the development of a measurement instrument, and a third phase which involved the collection and analysis of quantitative data.

In the first phase, through the content analysis of interviews with 33 international high-performance judo stakeholders and through a deductive-inductive approach using the Sports Policy Factors Leading to International Sporting Success (SPLISS) model and Systems Theory, 11 categories and 44 subcategories were identified that were considered the dimensions and the organizational factors influencing international sporting success in high-performance judo.

From the qualitative phase, it can be concluded that the existence of a high-performance sports system is required for the development of judo in a country as well as for increased possibilities regarding success in international sporting. The system should reflect a number of factors highlighting its organization, administrative structure and especially the communication/integration and clear roles of the organization, which make up the system and promote judo in the country.

Financial, human and material resources are also needed to add to the system, or could even be considered a systems' responsibility. Qualitative human resources are important in this regard, these being athletes with technical and tactical quality in

the case of judo, besides the strategic use of resources and the existence of spaces for the practice and the judokas' development.

Regarding the processes, two points should be emphasized. One relates to the existence of qualified teachers and coaches, talent identification and a system of development both for athletes' support and post-career programs. As for qualified teachers and coaches, these professionals can provide a multiplicative effect, as they are responsible for all teaching and training of judo practitioners in a country, territory or club. The talent identification and development system in judo can be complex, there are different weight categories requiring different physical characteristics of athletes. On the other hand, in judo this characteristic enables the success of people with different features that include technical and tactical skills and psychological profiles. A micro-system that has criteria and uses competitions to identify talent seems to be what is needed to develop athletes in judo. Such a model is even used in some countries, according to some interviewees who participated in the first qualitative phase and a system related to the development of talented judokas seems to be a differential in the pursuit of international sporting success in high-performance judo. In the case of athlete support and post-career programs, there must be a context that makes a dedication to judo professionally interesting to an individual, either intrinsically or extrinsically, in addition to all the support related to sport, technical and tactical development of judo athletes.

The second point relates to the existence of competitions and scientific support. This second group of processes aims to send the best athletes to international competitions, creating a competitive judo environment (with technical quality) in the country amongst others. In addition, scientific knowledge can improve judo teaching and training, or even improve the management of judo organizations. A better knowledge of teaching and training judo for example contributes to better human resources and to the processes related to these professionals. At this point, all these manageable organizational factors (related to resources and process) were in line with the other research results, like the SPLISS model, even though specific judo characteristics influence the development of judo in a country and the pursuit of sporting success in the international judo context.

In accordance with Systems Theory, the influence of the environment on the development of judo in a country and therefore, on the organizational factors

influencing international sporting success in high-performance judo, was also identified. The environmental influences identified have contributed interestingly to high-performance sports policies in judo. First the tradition, history and cultural aspects can be decisive for the judo development (or not) in a country. In fact, historical and cultural factors linked to judo in a country cannot be ignored, while histories and cultures can be constructed over time. Secondly, the influence of governments, sponsors and media can facilitate or inhibit the judo development in a country. These factors suggests a dependency of the national judo organizations on these environmental “factors”. The interest (or not) from these entities may be of influence in raising resources and fulfil most of the important system processes. In this sense, the national judo organizations should also adopt a strategy for establishing partnerships to enable the achievement of the desired objectives.

All these results and their considerations enabled the elaboration of the JUDO-OFIISS model. This model may provide a preliminary knowledge for the development and management in high-performance judo and it can even be used as a model for the identification and evaluation of key factors in judo policies and systems that may be of influence in achieving international success. It is also essential to conclude that the qualitative results that allowed the development of the JUDO-OFIISS were validated, first through the evaluation of experts in the second phase as well as through the third phase results.

In addition to the validation of the qualitative results and hence of the JUDO-OFIISS model, results from the third phase also provided interesting findings. In this quantitative phase, one of the main findings was that success in high-performance judo systems depends on the combination and synergy of resources, process and environment. This finding is a basic principle of systems theory and suggests a combination of (and the existing interrelationships among) the organizational factors identified, which may be different in each country for the achievement of international sporting success in high performance judo. The third phase of this research found six factors that present the interrelationships among of the organizational factors influencing international sporting success in high performance judo. Thus, there is no magic formula, or an exact order of organizational factors. As already mentioned, the results provide preliminary knowledge on the development of and management in high-

performance judo, but the context will determine a (possible) ideal combination of the organizational factors in different countries or even in different judo organizations.

This research identified and validated the organizational factors that influence international sporting success in high-performance judo and a model that summarized them was created. The results are preliminary, but can contribute to a better understanding of the development of judo and of the factors influencing sporting success.

Finally, the weaknesses in this study relate to non-participation of other individuals (or from all desired) countries in Phase 1, as well as the impossibility or the availability of an international sample in Phase 3. Another weakness, it is that this research had focused on organizational factors (meso-level). According to the literature, it is known that in a system other factors influencing the sport development and in the achievement of international success (macro-level and micro-level). 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 characteristics and new factors at a sport specific level (in this case judo) were identified. Knowledge regarding high-performance sport systems is complex, as each country has histories, cultures and other environmental factors that influence its sports development. At the same time, when analyzing the systems, it is not considered individual life stories that are particular to each athlete and the explanation of their success achieved in the major international events. In conclusion, the results of this research add to the academic knowledge on the subject in that they derive specific characteristics of each sport and the environmental factors (historical, cultural and contextual) that influence the specific sports level development in a country. Other studies may provide further insight using other sports in their analyses, or by focusing on combat sport similar to judo or even judo, since they use other theoretical approaches. Probably the results may be similar, but with great influence of specific characteristics that are present and are relevant in each sport.

Future research can also improve on some limitations found in this research and deepen the understanding of organizational factors that influence the international

sporting success in high-performance judo. For example, other research can investigate the existence of other possible organizational factors and these new factors may emerge over time, as are those identified as relevant with the moment and the current international high-performance context; or improve the elucidation of the factors identified in this research,. Moreover, it is suggested that future research could realize quantitative procedures in samples from other countries (international sample) or could carry out procedures involving confirmatory analysis or structural equation modelling in order to identify the importance or the real “power” of each organizational factor on judo performance. Nevertheless, the JUDO-OFIISS model developed in this research can be used as the basis to compare judo policies in different countries.

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**Appendix 1** - An overview of the research on sports policies, high performance sport systems and factors leading to international sporting success and its relationship with the Systems Theory

Authors	Objectives and research context	Methods / Design	System Theory			
			Input	Process	Environment	Output / Results
<b>Green and Houlihan (2005)</b>	Describe and compare sports policy of Australia, Canada and UK in swimming, athletics and sailing	Descriptive and Comparative through interviews and document analyses (Advocacy coalition framework - ACF)	(1) elite-level facilities, (2) 'full-time' athletes	(2) support for athletes, (3) coaching, sports science and sports medicine, (4) competition opportunities for elite level athletes	Cultural, political and economic elements in each country	Political priority in elite sport
<b>Bergsgard et al. (2007)</b>	Identify the characteristics of sport policy in Canada, UK, Germany and Norway	Descriptive and Comparative through secondary data and interviews	Financial resources, training centres	Systematization and professionalization of training, scientific methods to improve performance	Global trends, traditions, cultural peculiarities, and national policies	Success in international sport competition Number of medals in Olympic Games
<b>Houlihan and Green (2008)</b>	Describe sports policy from China, France, Germany, Japan, Norway, New Zealand, Poland, Singapore, and the USA	Contributors description of each country (analytical framework - Advocacy coalition framework - ACF)	Finance / wealth Sport facilities	Talent identification system, organization of training centres	Globalization, characteristics of each country, availability of finance / wealth, policy learning, path dependency, policy transfer	Policy goals Developing athletes
<b>Andersen and Ronglan (2012a, 2012b)</b>	Describe the sport systems in the Nordic countries: Sweden, Finland, Norway and Denmark	Descriptive analyses through historical data, policies documents and interviews with key leaders of NOC and NSO from the four countries.	-	-	Success stories Regional initiatives and competencies Historical sport developments (elite vs. mass) Organisational and cultural conditions	(1) Answer internal needs and demands (2) Seek international sporting results

Authors	Objectives and research context	Methods / Design	System Theory			
			Input	Process	Environment	Output / Results
<b>Madella, Bayle and Tome (2005)</b>	Compare performance in swimming (diving, synchronised swimming and water polo) from Italy, Greece, Portugal and Spain.	Comparative analysis basis in multidimensional performance and systemic approach (multiple-constituency approach)	(1) Human resources (2) Finances	(3) Institutional communication, partnership and inter-organisational relations	(6) General socio-economic and sport data	(4) Volume of services delivered (5) International competitive results of athletes and teams
<b>Green and Oakley (2001)</b>	Explore sport policies of former Eastern Bloc's countries and Western nation-states as an attempt to identify a trend towards uniformity in elite sport systems	Analysis of documents and interviews with key personnel responsible of the former Eastern Bloc countries (German Democratic Republic and the Union of Soviet Socialist Republics) and countries of the Western Block (Australia, Canada, France, Spain, UK, USA) (figurational/process sociology)	(6) Specific facilities for elite athletes; (7) targeting of resources on a small number of sports; (9) appropriate funding for infrastructure and people	(1) Clear understanding about the role of the different agencies communication; (2) simplicity of administration; (3) talent and athletes develop system; (4) interaction between athletes, coaches, managers, scientists; (5) competitive programmes; (8) planning for each sports needs; (10) lifestyle support and preparation for life after sport	Globalization, political system, national context, history, and tradition,	International sporting success

Authors	Objectives and research context	Methods / Design	System Theory			
			Input	Process	Environment	Output / Results
<b>Digel (2005)</b>	Identify similarities and differences in high performance sport systems from Australia, China, France, Germany, UK, Italy, Russia and USA	Qualitative approach: interviews analysis of literature, socio-demographic analysis of data and documents (success-resources-model)	coaches; athletes; financial resources; sports facilities; sports participation;	Organizational structure; training; talent development; support for athletes and coaches; fight against doping; competition system; priorities in some sports;	Social values; political, economic, educational system; influence of mass media; demographics and population; quality of life; employment levels; equality and social justice; ideology and tradition in high performance sport. The role of the state and policies, economy, mass media, education, science and military system	International sporting success
<b>De Bosscher et al. (2006)</b>	Propose a conceptual model of the determinants of success in elite sport policy by clustering measurable criteria into a few policies areas that can be compared on a trans-national basis	Comprehensive literature review, analysis of secondary data, opinion of athletes and coaches about determinants that are important for international sporting success	(1) financial support	(2) structure and organization; (3) foundation and participation; (4) talent development; (5) athlete career support; (6) training facilities; (7) coaching provisions and development; (8) (inter)national competition; (9) scientific research	social and cultural context; economic welfare; population; geographic; climatic; degree of urbanisation, political system	Olympic medals or other events, top six or eight places, relative success or number of participants qualifying

Authors	Objectives and research context	Methods / Design	System Theory			
			Input	Process	Environment	Output / Results
<b>Sotiriadou et al. (2013)</b>	Identify sport policy factors explain Sprint Canoe's success	Qualitative approach: semi-structured in-depth interviews analysed based on the sport policy factors that lead to international sporting success (SPLISS) model	Mass participation base and grassroots numbers	Coach development; Athlete pathways: participation, identification, talent development and athletes; Organisation; Competition; Facilities and Equipment; Research and sport science	Culture from surf lifesaving Fun culture Excellence culture	International sporting success
<b>Truyens et al. (2014)</b>	Identify the organizational resources and first-order capabilities that may lead to a competitive advantage in elite athletics	Qualitative approach: literature review and interviews with coaches and high-performance directors that act in international athletics context. Analysis from and resource-based view (RBV) approach and SPLISS model	Financial Support	Governance and organization of athletics policies; Youth participation in athletics; Talent identification and development; Athlete career support; Training and competition facilities; Coach provisions and education; (inter)national competition opportunities; Scientific support	Environmental success factors	Competitive advantage in international athletics

Authors	Objectives and research context	Methods / Design	System Theory			
			Input	Process	Environment	Output / Results
<b>Brouwers et al. (2015)</b>	Examining the policy and other factors that influence international tennis success	Mixed methods research which combined (a) open questions, and (b) Likert scale questions, based on the Sport Policy Factors that Lead to International Success (SPLISS) model	Financial support	Structure and organisation of tennis policies; Tennis participation; Talent identification and development system; Athletic and post career support; Training facilities; Coaching provision and coach development; (Inter) national competition; Scientific research;	Tennis culture; Professional environment; Private sector; Media: Sponsors	International sporting success

## Appendix 2 - Certificado de apresentação para apreciação ética (CAAE)

ESCOLA DE EDUCAÇÃO  
FÍSICA E ESPORTE DA  
UNIVERSIDADE DE SÃO



### PARECER CONSUBSTANCIADO DO CEP

#### DADOS DO PROJETO DE PESQUISA

**Título da Pesquisa:** Judô de Alto Rendimento: Fatores Organizacionais para o Sucesso Esportivo Internacional

**Pesquisador:** Maria Tereza Silveira Böhme

**Área Temática:**

**Versão:** 2

**CAAE:** 19531114.7.0000.5391

**Instituição Proponente:** UNIVERSIDADE DE SAO PAULO

**Patrocinador Principal:** Financiamento Próprio  
BANCO SANTANDER (BRASIL) S.A.

#### DADOS DO PARECER

**Número do Parecer:** 667.391

**Data da Relatoria:** 29/05/2014

#### Apresentação do Projeto:

O tema geral da investigação detém-se nas razões do sucesso esportivo internacional. O objetivo é identificar e verificar os fatores críticos de sucesso no judô internacional em termos organizacionais e analisar como o Judô é desenvolvido em diferentes países. A pesquisa adota como método o Modelo Sequencial Exploratório, com uma fase inicial de coleta e análise de dados qualitativos, seguida por uma fase relacionada com a construção de um instrumento e uma terceira etapa de coleta e análise de dados quantitativos. A pesquisa prevê inicialmente a participação de 30 sujeitos, entre treinadores, gestores, atletas e experts, de diferentes nacionalidades, representantes dos 10 principais países nesta modalidade. A escolha dos sujeitos estará baseada na disponibilidade dos indivíduos em relação aos objetivos do projeto de pesquisa, e na análise do desempenho dos países que competiram no judô nos Jogos Olímpicos de Londres, em 2012. Os sujeitos serão contatados durante eventos esportivos internacionais no Brasil e/ou durante estágio acadêmico no exterior do pesquisador assistente. As entrevistas serão gravadas, transcritas e traduzidas quando necessário. Na primeira fase a coleta de dados se dará por meio de entrevistas semiestruturadas, as quais irão subsidiar o desenvolvimento de um instrumento quantitativo, submetido à validação de especialistas na segunda fase. Em um terceiro momento o instrumento será aplicado a uma amostra maior ainda a ser definida. Os dados qualitativos serão submetidos a análise de conteúdo, e posteriormente os resultados serão analisados por meio de análise multivariada. Espera-se que os resultados possam subsidiar ações de melhoria na gestão desta modalidade, especialmente no Brasil.

**Endereço:** Av. Prof<sup>o</sup> Mello Moraes, 65

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**Telefone:** (113)091-3097

**Fax:** (113)812-4141

**E-mail:** cep39@usp.br

**Objetivo da Pesquisa:**

O objetivo primário do estudo é: Identificar e verificar os fatores críticos de sucesso no judô internacional em termos organizacionais. O objetivo secundário é: Identificar como o Judô de alto rendimento é desenvolvido em diferentes países.

**Avaliação dos Riscos e Benefícios:**

Os riscos são mínimos e inerentes à participação dos sujeitos em uma entrevista. Os resultados da pesquisa poderão estender o conhecimento sobre políticas, estruturas e ações estratégicas realizadas na modalidade judô, podendo ser útil para treinadores e gestores.

**Comentários e Considerações sobre a Pesquisa:**

A pesquisa está bem apresentada, com referencial adequado e descrição detalhada da metodologia. O pesquisador assistente é aluno de doutorado da EEFÉ e tem financiamento do Programa Santander de Mobilidade Internacional.

**Considerações sobre os Termos de apresentação obrigatória:**

Os termos de apresentação obrigatória são devidamente apresentados. O TCLE está bem redigido e é apresentado tanto em português como em versão para a língua inglesa. O pesquisador inclui também o roteiro de questões da entrevista inicial.

**Recomendações:**

**Conclusões ou Pendências e Lista de Inadequações:**

As solicitações do parecer anterior foram devidamente atendidas não havendo portanto pendências.

**Situação do Parecer:**

Aprovado

**Necessita Apreciação da CONEP:**

Não

**Considerações Finais a critério do CEP:**

Parecer aprovado na reunião ordinária do Comitê de Ética em Pesquisa da Escola de Educação Física e Esporte da Universidade de São Paulo realizada em 29/05/2014.

29 de Maio de 2014

---

**Assinado por:**

**Maria Augusta Peduti Dal'Molin Kiss**

**(Coordenador)**

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## Krippendorff's Alpha Reliability - round 01

Run MATRIX procedure:  
Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	.4876	-.2411	.7932	878.0000	2.0000	878.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	1.0000
.8000	1.0000
.7000	.8013
.6700	.8013
.6000	.8013
.5000	.5359

Number of bootstrap samples:  
10000

Judges used in these computations:  
a b

=====

Observed Coincidence Matrix

1698.00	.00	.00
.00	.00	29.00
.00	29.00	.00

Expected Coincidence Matrix

1641.88	28.06	28.06
28.06	.46	.48
28.06	.48	.46

Delta Matrix

.00	1.00	1.00
1.00	.00	1.00
1.00	1.00	.00

Rows and columns correspond to following unit values

.00	.00	.00
-----	-----	-----

Examine output for SPSS errors and do not interpret if any are found

----- END MATRIX -----

## Krippendorff's Alpha Reliability - round 02

Run MATRIX procedure:

ERROR: Input Reliability Data Matrix Exhibits No Variation.

Examine output for SPSS errors and do not interpret if any are found

----- END MATRIX -----

#### Appendix 4 - Correspondence between the subcategories identified in the phase 1 and the items of the questionnaire

Subcategories			Items	
1	1.1	Sport System	I10	A Sport system where all the Judo organizations interact, to achieve a better development of Judo in the country (schools, associations, clubs, federations, confederation, etc.)
2	1.2	Organization	I11	I11 The administrative organization of Judo in the country
3	1.3	Long-term Planning	I12	Long-term planning for high-performance Judo development
4	1.4	Professional staffs	I13	Professional staff that is responsible for the national management of judo
5	1.5	Clear roles of Judo Organizations	I14	Clear roles for organizations that are part of the Judo System in the country (schools, associations, clubs, federations, Confederation, etc.)
6	1.6	Management Structure	I20	Administrative structure (own head office, departments, etc.) for Judo management in the country
7	1.7	Communication and Integration among Judo organizations	I16	Integration/communication among the organizations that act in Judo in the country (schools, associations, clubs, federations, Confederation, etc.)
8	2.1	Absolute amount of Judo players	I1	Absolute number of Judo players in the country
			I3	Absolute number of athletes (+ 21 years old) that participate of judo training
9	2.2	Quality of young Judokas	I2	Technical Judo quality of young Judokas (under 18) in the country
10	2.3	Quality of Judo partners	I5	Technical quality of judo partners (+ 21 years old) in the country

Subcategories			Items	
11	3.1	Support for sufficient dedication to training and professional possibilities	I47	Salary opportunities and professional recognition to motivate those who are interested in engaging in a career as a judo athlete in the country
12	3.2	International internships and training camps	I17	Investments to enable the hosting of, or participation in, international internships and training camps
13	3.3	Holistic support	I25	Paid multidisciplinary team composed of physical trainers, doctors, physiotherapists, nutritionists, psychologists, etc. for holistic support of the athletes training
			I26	Athletes receive support for their education (scholarships, flexible schedules and tests, etc.)
			I32	Technical, educational, medical, physiotherapy, nutritional, psychological, etc. (holistic) support for young judokas who are part of national youth teams
14	3.4	Post-career program	I27	Post-Career programs that aim to prepare athletes for professional activities after the end of their careers as professional athletes
15	3.5	Technical and tactical support	I28	Adult athletes receive high quality technical/tactical orientation
16	4.1	General funding	I4	General funds for the development of Judo in the country
17	4.2	Funds for competitions and training	I17	Investments to enable the hosting of, or participation in, international internships and training camps
			I21	International competitions participation Investment
18	4.3	Funds for athletes	I24	Financial support for athletes to dedicate themselves only to technical and physical training
19	4.4	Funds for management structure	I20	Administrative structure (own head office, departments, etc.) for Judo management in the country
20	4.5	Funds for coach education	I15	Specific training programs (technical/pedagogical training) for coaches and teachers
21	4.6	Funds for the multidisciplinary team	I25	Paid multidisciplinary team composed of physical trainers, doctors, physiotherapists, nutritionists, psychologists, etc. for holistic support of the athletes training
			I32	Technical, educational, medical, physiotherapeutic, nutritional, psychological, etc. (holistic) support for young judokas who are part of national youth teams

Subcategories			Items	
22	5.1	Quality of teachers at the grassroots level	I6	The quality of teachers (technical/pedagogic) who work at the grassroots level, and in teaching Judo to children
23	5.2	Teachers and coaches training programs	I15	Specific training programs (technical/pedagogical training) for coaches and teachers
24	5.3	Quality of elite coaches	I8	The quality of elite coaches (technical/tactical) who work with high-performance athletes (young and adults)
25	5.4	Professional conditions for teachers and coaches	I41	Good professional conditions for teachers/coaches to work exclusively with Judo
26	6.1	Success tradition and role models	I42	Tradition in winning medals in the major international judo competitions
			I44	National idols, Olympic and World judo medallists
27	6.2	Popularity	I43	The country's population recognizes Judo (as a known sport, a "famous" sport)
28	6.3	Fighting spirit	I46	The fighting spirit of the population in a country (determination, nationalism, persistence, etc.)
29	6.5	History of Judo in the country	I45	Historical influence on the development of Judo in the country (local fights styles, Japanese immigration, etc.)
30	6.6	High performance sport culture	I40	Olympic Sports are culturally important to the country

Subcategories			Items	
31	7.1	International competitions	I21	Investments in the participation in international competitions
32	7.2	Compete	I18	Experience in competitions, compete
33	7.3	National calendar and competition structure	I22	Organized regional/national competitive calendar
34	7.4	Host nation effect	I38	Major sport events hosted in the country (Olympic Games, Pan American Games, international championships, etc.)
35	7.5	Competitions at grassroots level	I19	Organization of the competitions at the grassroots level
			I23	Competitions/Judo events appropriate to the age of judo players (e.g. Festivals for children under 12)
36	8.1	Training centres	I9	Training centres where athletes and coaches can have access to all kinds of necessary services for training, dining and accommodation
37	8.2	Local spaces for practice	I7	Local spaces with structure/mats-tatamis where interested people can practice/train Judo
38	9.1	Interest of the government	I35	Government investments in Judo (Municipal, State or National level)
39	9.2	Media and Sponsorship	I36	Media interest in Judo (broadcasting events and reporting this sport)
			I37	Companies that sponsor the athletes and national judo organizations in the country
40	9.3	Country location	I39	Neighbouring countries that have good athletes and a tradition in international Judo, as this facilitates the international internships
41	10.1	Selection process	I30	Technical/tactical criteria for the young judokas selection who will pass through specific training programs
42	10.2	Competition for selection	I29	Competitions with the goal to identify/detect talented young judokas
43	10.3	Talents promotion	I31	Promotion of the judo talents (under-18, under-21 and under-23) for the adult national teams

Subcategories		Items
44	11.1	Applied research (technical/tactical, physical training)
		Applied scientific research (use of knowledge) to improve the quality of Judo learning/training
		Match (video) analyses of the main international opponents
		Olympic Medals
		To win Olympic Medals
		Complete team in the Olympic Games
		To have a national team of 7 male athletes and 7 female athletes competing in the Olympic Games
		Medal in World Ranking events
		To win medals in the major Judo international events of the World Ranking
		Athletes with technical quality in the World Ranking
		To have several athletes with technical quality in the Judo World Ranking
		Two athletes in each category qualified for Olympics
		To have at least two athletes in each category of the Judo World Ranking and qualified for the Olympic Games

## Appendix 5 - Questionnaire on the organizational factors influencing the international sporting success in high-performance judo

"High-performance Judo: organizational factors influencing the international sporting success"	
<p>This research project presents an opportunity for Brazilian judokas to contribute to gaining information and hence to provide a better development of Judo in the country. The intent is to know what is important to be successful in international Judo. The research project covers different areas and is divided into two parts: The part concerning "General Data" gathers information about their activity and their experience in Judo. The part concerning "Organizational Factors" will be your opinion on the importance that the items have to achieve success in international Judo. Participants will have the opportunity to reply to a critical framework, and to give their opinion on the research subject. The answers are confidential and will not be identified individually.</p>	
<b>Statement of Informed Consent</b>	
<p>The objectives of this research project are:</p> <ol style="list-style-type: none"> <li>To identify the factors that are important to achieving success in International Judo in organizational terms;</li> <li>To verify through athletes, coaches, performance directors and experts what factors are important to success in the International Judo;</li> <li>To increase and improve the knowledge of the planning that should be developed by countries who are interested in success in the competitive environment that exists in the current context of international Judo.</li> </ol> <p>Your participation in this research project - through consenting to partake in the interview - is voluntary. Your name will be kept confidential. There are no situations where discomfort may occur and there is no risk. There are no benefits to be obtained and you will not be endowed with alternative procedures which can be beneficial to the individual.</p> <p>The responsible researcher will answer any questions you may have about your participation in this research, its procedures, risks and benefits provided. Additionally, you have the right to withdraw at any time if you judge that the questionnaire provides you any injury or disorder. Secret, confidentiality and privacy of the data and information obtained are ensured by the main researcher: Prof. Leandro Mazzei (leandromazzei@usp.br).</p>	
<p>I declare that, after suitable clarification by the researcher, I have understood what was explained to me, and I consent to participate in this research project.</p> <p style="text-align: right;"><input type="checkbox"/> I agree</p>	
<p>If you are under 18 years of age, it is necessary that the person responsible for you agrees to the above terms and authorizes your participation in the research. In this case, please enter the full name and the RG number or social security number of the person responsible:</p>	
Full name of the person responsible	RG or SS number

Athletes	
GENERAL DATA	
Full name:	
E-mail:	
What is your gender? <input type="radio"/> Male <input type="radio"/> Female	Date of Birth
Country of birth, in which country were you born?	In which country do you currently train?
State of birth, In which state were you born?	In which country do you currently train?
City of birth, in which city were you born?	In which city do you currently train?
At what age did you start to practice Judo? Please, write down your answer.	
At what age did you start to seriously engage in Judo training? Please, write down your answer	
What's the name of the association/club you fight for? In which city and state is it located? E.g.: Jita Kyoei - São Paulo	
<p>What is the <u>highest level</u> of success that you have achieved as a Judo athlete? Please, select only one option below:</p> <p><input type="radio"/> International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank)</p> <p><input type="radio"/> International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank)</p> <p><input type="radio"/> International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank)</p> <p><input type="radio"/> International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level)</p> <p><input type="radio"/> National Level (you have represented your country in international events and classified in national events)</p> <p><input type="radio"/> State Level (you have represented your state in national events and classified in state events)</p> <p><input type="radio"/> Regional Level (you have represented your city/region in state events)</p> <p><input type="radio"/> None of the above</p>	
<p>In which level would you currently classify yourself as a Judo athlete (consider last 2 years)? Please, select only one option below:</p> <p><input type="radio"/> International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank)</p> <p><input type="radio"/> International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank)</p> <p><input type="radio"/> International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank)</p> <p><input type="radio"/> International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level)</p> <p><input type="radio"/> National Level (you have represented your country in international events and classified in national events)</p> <p><input type="radio"/> State Level (you have represented your state in national events and classified in state events)</p> <p><input type="radio"/> Regional Level (you have represented your city/region in state events)</p> <p><input type="radio"/> None of the above</p>	

Which of the following best describes your currently situation?  
Please, select only one option below:

Being an athlete is my sole occupation       I am an athlete, a student and I work

I am an athlete and a student       I am an athlete and in the military

I am an athlete and I work       Other option

If you selected "Other Option", explain it:

If you selected an option in the previous question in which you reconcile a career as an athlete with some other activity, write down how many hours **per week** you spend:

In your training sections?  
On other activities?

What is the highest level of education you have completed?  
Please, choose only one option:

Primary school: 1st to 5th grade       University student

Primary school: 6th to 9th grade       Graduate

High school incomplete       Post-graduate. What course?

High school complete

If you selected "Graduate" or "Post-graduate", write down your course name at the graduation level

If you selected "Post-graduate", write down your course name at this level

**Coaches**

**GENERAL DATA**

Full name:

E-mail:

What is your gender?  
 Male     Female      Date of Birth

Country of birth, in which country were you born?      In which country do you currently train?

State of birth, In which state were you born?      In which country do you currently train?

City of birth, in which city were you born?      In which city do you currently train?

Are/were you a Judo player?      At what age did you start to practice Judo? Please, write down your answer  
 Yes     No

What is the highest level of success that you have achieved as a Judo athlete?  
Please, select only one option below:

- International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level)
- National Level (you have represented your country in international events and classified in national events)
- State Level (you have represented your state in national events and classified in state events)
- Regional Level (you have represented your city/region in state events)
- None of the above

What was the name of the association/club you fight for? In which city and state is it located? E.g.: Jita Kyoei - São Paulo. Please, write down your answer

At what age did you start to seriously engage in the carrier of Judo teaching/coaching? Please, write down your answer.

How long have you been teaching/coaching Judo? Please, write down your answer

You work currently, as a teacher/coach at: Please, select the best option and write down the organization's name		Is it a paid work?	Which of the following best describes your currently professional situation? Please, select only one option below:
National federation	Name:	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Being a teacher/coach is my sole occupation am a full time <input type="radio"/> I am a teacher/coach and I study <input type="radio"/> I am a teacher/coach and I have a second job <input type="radio"/> I am a teacher/coach, I study, and I have a second job. <input type="radio"/> Other option If you have a second job, write down it, or if you answered "Other option", explain it.
State federation	Name:	<input type="radio"/> Yes <input type="radio"/> No	
Club	Name:	<input type="radio"/> Yes <input type="radio"/> No	
NGO	Name:	<input type="radio"/> Yes <input type="radio"/> No	
Sport State Program	Name:	<input type="radio"/> Yes <input type="radio"/> No	
Sport Municipal Program/or City Club	Name:	<input type="radio"/> Yes <input type="radio"/> No	
Other option/explain	Name:	<input type="radio"/> Yes <input type="radio"/> No	

What is the highest level you have worked as a Judo teacher/coach?  
Please, select only one option below:

- International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level)
- National Level (you have represented your country in international events and classified in national events)
- State Level (you have represented your state in national events and classified in state events)
- Regional Level (you have represented your city/region in state events)
- None of the above

What is currently the level of the athletes you coach? Please, select only one option below:

- Club team – Youth athletes
- Club team – Adult athletes
- Regional team – Youth athletes
- Regional team – Adult athletes
- State team – Youth athletes
- State team – Adult athletes
- National team – Youth athletes
- National team – Adult athletes
- National team – Adult athletes (main athletes, Olympic team)
- Other option/explain:

5. If you selected an option in the previous question in which you reconcile a career as a teacher/coache with some other activity, write down how many hours per week you spend:

The classes/coaching sections

On other activities

What is the highest level of education you have completed?  
Please, choose only one option:

- Primary school: 1st to 5th grade
- Primary school: 6th to 9th grade
- High school incomplete
- High school complete
- University student
- Graduate
- Post-graduate. Which course?

If you selected "Graduate" or "Post-graduate", write down your course name at the graduation level

If you selected "Post-graduate", write down your course name at this level

<b>Performance Directors</b>		You work currently, as a performance director at: Please, select the best option and write down the organization's name		Is it a paid work?
<b>GENERAL DATA</b>		National federation	Name:	<input type="radio"/> Yes <input type="radio"/> No
Full name:		State federation	Name:	<input type="radio"/> Yes <input type="radio"/> No
E-mail:		Club	Name:	<input type="radio"/> Yes <input type="radio"/> No
What is your gender? <input type="radio"/> Male <input type="radio"/> Female	Date of Birth	NGO	Name:	<input type="radio"/> Yes <input type="radio"/> No
Country of birth, in which country were you born?	In which country do you currently train?	Sport State Program	Name:	<input type="radio"/> Yes <input type="radio"/> No
State of birth, in which state were you born?	In which country do you currently train?	Sport Municipal Program/or City Club	Name:	<input type="radio"/> Yes <input type="radio"/> No
City of birth, in which city were you born?	In which city do you currently train?	Other option/explain	Name:	<input type="radio"/> Yes <input type="radio"/> No
Are/were you a Judo player? <input type="radio"/> Yes <input type="radio"/> No	How old you start to practice Judo? Please, write down your answer:	What is the highest level you have worked as a Judo performance director? Please, select only one option below:		
What is the <u>highest level</u> of success you have achieved as a Judo athlete? Please, select only one option below:		<input type="radio"/> International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank) <input type="radio"/> International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank) <input type="radio"/> International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank) <input type="radio"/> International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level) <input type="radio"/> National Level (you have represented your country in international events and classified in national events) <input type="radio"/> State Level (you have represented your state in national events and classified in state events) <input type="radio"/> Regional Level (you have represented your city/region in state events) <input type="radio"/> None of the above		
What was the name of the association/club you fight for? In which city and state is it located? E.g.: Jita Kyoei - São Paulo. Please, write down your answer		What is currently the level of the athletes you work? Please, select only one option below:		
At what age did you start to seriously engage in the carrier of Judo performance director? Please, write down your answer.		<input type="radio"/> Club team – Youth athletes <input type="radio"/> Club team – Adult athletes <input type="radio"/> Regional team – Youth athletes <input type="radio"/> Regional team – Adult athletes <input type="radio"/> State team – Youth athletes <input type="radio"/> State team – Adult athletes <input type="radio"/> National team – Youth athletes <input type="radio"/> National team – Adult athletes <input type="radio"/> National team – Adult athletes (main athletes, Olympic team) <input type="radio"/> Other option/explain:		
How long have you been Judo performance director? Please, write down your answer				

Which of the following best describes your currently professional situation?  
Please, select only one option below:

Being a performance director is my sole occupation

I am a performance director and I study

I am a performance director and I have a second job

I am a performance director, I study, and I have a second job.

Other option

If you have a second job, write down it, or if you answered "Other option", explain it.

5. If you selected an option in the previous question in which you reconcile a career as a performance with some other activity, write down how many hours **per week** you spend:

The performance director activities

On Other activities

What is the highest level of education you have completed?  
Please, choose only one option:

Primary school: 1st to 5th grade

Primary school: 6th to 9th grade

High school incomplete

High school complete

University student

Graduate

Post-graduate. Which course?

If you selected "Graduate" or "Post-graduate", write down your course name at the graduation level

If you selected "Post-graduate", write down your course name at this level

**Experts**

**GENERAL DATA**

Full name:

E-mail:

What is your gender?  
 Male  Female

Date of Birth

Country of birth, in which country were you born?

In which country do you currently train?

State of birth, In which state were you born?

In which country do you currently train?

City of birth, in which city were you born?

In which city do you currently train?

Are/were you a Judo player?  
 Yes  No

How old you start to practice Judo? Please, write down your answer:

What is the highest level of success you have achieved as a Judo athlete?  
Please, select only one option below:

- International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank)
- International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level)
- National Level (you have represented your country in international events and classified in national events)
- State Level (you have represented your state in national events and classified in state events)
- Regional Level (you have represented your city/region in state events)
- None of the above

What was the name of the association/club you fight for? In which city and state is it located? E.g.: Jita Kyoei - São Paulo. Please, write down your answer

At what age did you start to seriously engage in the carrier of Judo expert? Please, write down your answer.

How long have you been Judo expert? Please, write down your answer

You work currently, as an expert at: Please, select the best option and write down the organization's name		Is it a paid work?	Which of the following best describes your currently professional situation? Please, select only one option below:
National federation	Name:	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Being a Judo expert is my sole occupation
State federation	Name:	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> I am an expert and I study
Club	Name:	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> I am an expert and I have a second job
NGO	Name:	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> I am an expert, I study, and I have a second job.
Sport State Program	Name:	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Other option
Sport Municipal Program/or City Club	Name:	<input type="radio"/> Yes <input type="radio"/> No	If you have a second job, write down it, or if you answered "Other option", explain it.
Other option/explain	Name:	<input type="radio"/> Yes <input type="radio"/> No	

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What is the highest level you have worked as a Judo expert?  
Please, select only one option below:

International Level 1 - among the 3 best judo athletes in the world. (Olympic Games, World Champ, World Rank)

International Level 2 - among the 8 best judo athletes in the world. (Olympic Games, World Champ, World Rank)

International Level 3 - among the 16 best judo athletes in the world. (Olympic Games, World Champ, World Rank)

International Level 4 – among the 8 best judo athletes of your Continent. (Pan American Games, or similar level)

National Level (you have represented your country in international events and classified in national events)

State Level (you have represented your state in national events and classified in state events)

Regional Level (you have represented your city/region in state events)

None of the above

---

What is currently the level of the athletes you work? Please, select only one option below:

Club team – Youth athletes

Club team – Adult athletes

Regional team – Youth athletes

Regional team – Adult athletes

State team – Youth athletes

State team – Adult athletes

National team – Youth athletes

National team – Adult athletes

National team – Adult athletes (main athletes, Olympic team)

Other option/explain:

---

5. If you selected an option in the previous question in which you reconcile a career as an expert with some other activity, write down how many hours **per week** you spend:

The expert activities

Other activities

---

What is the highest level of education you have completed?  
Please, choose only one option:

Primary school: 1st to 5th grade

Primary school: 6th to 9th grade

High school incomplete

High school complete

University student

Graduate

Post-graduate. Which course?

---

If you selected "Graduate" or "Post-graduate", write down your course name at the graduation level

---

If you selected "Post-graduate", write down your course name at this level

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**“ORGANIZATIONAL FACTORS”**

Remember, the objective of this research project is to know what is important to be successful in international Judo. Answer the question: “What are, in your opinion, important factors in organizational terms for nations to be successful in international Judo competitions?” Put an “X” on the level of importance of each item below - on a rating scale from "Not important" and "Very important". - to the sporting success of the country in international Judo (medals , Good results...):

**Page 1**

	← No important				Very important →			
I1 Absolute number of Judo players in the country	<input type="radio"/>							
I2 Technical judo quality of young Judokas (under 18) in the country	<input type="radio"/>							
I3 Absolute number of athletes (+ 21 years old) that participate in judo training	<input type="radio"/>							
I4 General funds for the development of Judo in the country	<input type="radio"/>							
I5 Technical judo quality of judo partners (+ 21 years old) in the country	<input type="radio"/>							
I6 The quality of teachers (technical/pedagogic) who work at the grassroots level, and in teaching Judo to children	<input type="radio"/>							
I7 Local spaces with structure/mats-tatamis where interested people can practice/train Judo	<input type="radio"/>							
I8 Elite coaches quality (technical/tactical) who with high-performance athletes (young and adults)	<input type="radio"/>							
I9 Training centres where athletes and coaches can have access of all kinds of necessary services for training, dining room and accommodation	<input type="radio"/>							

**Page 2**

	← No important				Very important →			
I10 A Sport system where all the Judo organizations interact, to achieve a better development of Judo in the country (schools, associations, clubs, federations, confederation, etc.)	<input type="radio"/>							
I11 The administrative organization of Judo in the country	<input type="radio"/>							
I12 Long-term planning for high-performance Judo development	<input type="radio"/>							
I21 Investments in the participation in international competitions	<input type="radio"/>							
I14 Clear roles for organizations that are part of the Judo System in the country (schools, associations, clubs, federations, Confederation, etc.)	<input type="radio"/>							
I15 Specific training programs (technical/pedagogical training) for coaches and teachers	<input type="radio"/>							
I16 Integration/communication among the organizations that act in Judo in the country (schools, associations, clubs, federations, Confederation, etc.)	<input type="radio"/>							
I17 Investments to enable the hosting of, or participation in, international internships and training camps	<input type="radio"/>							
I18 Experience in competitions, compete	<input type="radio"/>							
I19 Organization of the competitions at the grassroots level	<input type="radio"/>							
I20 Administrative structure (own head office, departments, etc.) for Judo management in the country	<input type="radio"/>							
I21 Investments in the participation in international competitions	<input type="radio"/>							

Remember, the objective of this research project is to know what is important to be successful in international Judo. Answer the question: "What are, in your opinion, important factors in organizational terms for nations to be successful in international Judo competitions?" Put an "X" on the level of importance of each item below - on a rating scale from "Not important" and "Very important". - to the sporting success of the country in international Judo (medals , Good results...):

Page 3

	← No important				Very important →			
I22 Organized regional/national competitive calendar	<input type="radio"/>							
I23 Competitions/Judo events appropriate to the age of judo players (e.g. Festivals for children under 12)	<input type="radio"/>							
I24 Financial support for athletes to dedicate themselves only to technical and physical training	<input type="radio"/>							
I25 Paid multidisciplinary team composed of physical trainers, doctors, physiotherapists, nutritionists, psychologists, etc. for holistic support of the athletes training	<input type="radio"/>							
I26 Athletes receive support for their education (scholarships, flexible schedules and tests, etc.)	<input type="radio"/>							
I27 Post-Career programs that aim to prepare athletes for professional activities after the end of their careers as professional athletes	<input type="radio"/>							
I28 Adult athletes receive high quality technical/tactical orientation	<input type="radio"/>							
I29 Competitions with the goal to identify/detect talented young judokas	<input type="radio"/>							
I30 Technical/tactical criteria for the young judokas selection who will pass through specific training programs	<input type="radio"/>							
I31 Promotion of the judo talents (under-18, under-21 and under-23) for the adult national teams	<input type="radio"/>							
I32 Technical, educational, medical, physiotherapeutic, nutritional, psychological, etc. (holistic) support for young judokas who are part of national youth teams	<input type="radio"/>							
I33 Applied scientific research (use of knowledge) to improve the quality of Judo learning/training	<input type="radio"/>							
I34 Match (video) analyses of the main international opponents	<input type="radio"/>							

Page 4

	← No important				Very important →			
I35 Government investments in Judo (Municipal, State or National level)	<input type="radio"/>							
I36 Media interest in Judo (broadcasting events and reporting this sport)	<input type="radio"/>							
I37 Companies that sponsor the athletes and national judo organizations in the country	<input type="radio"/>							
I38 Major sport events hosted in the country (Olympic Games, Pan American Games, international championships, etc.)	<input type="radio"/>							
I39 Neighbouring countries that have good athletes and a tradition in international Judo, as this facilitates the international internships	<input type="radio"/>							
I40 Olympic Sports are culturally important to the country	<input type="radio"/>							
I41 Good professional conditions for teachers/coaches to work exclusively with Judo	<input type="radio"/>							
I42 Tradition in winning medals in the major international judo competitions	<input type="radio"/>							
I43 The country's population recognizes Judo (as a known sport, a "famous" sport)	<input type="radio"/>							
I44 National idols, Olympic and World judo medallists	<input type="radio"/>							
I45 Historical influence on the development of Judo in the country (local fights styles, Japanese immigration, etc.)	<input type="radio"/>							
I46 The fighting spirit of the population in a country (determination, nationalism, persistence, etc.)	<input type="radio"/>							
I47 Salary opportunities and professional recognition to motivate those who are interested in engaging in a career as a judo athlete in the country	<input type="radio"/>							

Remember, the objective of this research project is to know what is important to be successful in international Judo. Answer the question: "What are, in your opinion, important factors in organizational terms for nations to be successful in international Judo competitions?" Put an "X" on the level of importance of each item below - on a rating scale from "Not important" and "Very important". - to the sporting success of the country in international Judo (medals , Good results...):

Page 5

	← Nothing important				Very important →			
I48 To win Olympic Medals	<input type="radio"/>							
I49 To have a national team of 7 male athletes and 7 female athletes competing in the Olympic Games	<input type="radio"/>							
I50 To win medals in the major Judo international events of the World Ranking	<input type="radio"/>							
I51 To have several athletes with technical quality in the Judo World Ranking	<input type="radio"/>							
I52 To have at least two athletes in each category of the Judo World Ranking and qualified for the Olympic Games	<input type="radio"/>							

**Appendix 6 - Univariate analysis of variance (ANOVA)**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
I1	Between Groups	3.777	3	1.259	.931	.426
	Within Groups	537.021	397	1.353		
	Total	540.798	400			
I2	Between Groups	5.482	3	1.827	1.721	.162
	Within Groups	421.590	397	1.062		
	Total	427.072	400			
I3	Between Groups	5.376	3	1.792	1.570	.196
	Within Groups	453.203	397	1.142		
	Total	458.579	400			
I4	Between Groups	7.619	3	2.540	2.150	.093
	Within Groups	472.488	400	1.181		
	Total	480.106	403			
I5	Between Groups	2.159	3	.720	.912	.435
	Within Groups	313.953	398	.789		
	Total	316.112	401			
I6	Between Groups	8.304	3	2.768	2.810	.039
	Within Groups	394.931	401	.985		
	Total	403.235	404			
I7	Between Groups	.790	3	.263	.208	.891
	Within Groups	506.762	400	1.267		
	Total	507.552	403			
I8	Between Groups	.732	3	.244	.396	.756
	Within Groups	247.179	401	.616		
	Total	247.911	404			
I9	Between Groups	3.659	3	1.220	1.093	.352
	Within Groups	446.351	400	1.116		
	Total	450.010	403			
I10	Between Groups	3.668	3	1.223	1.169	.321
	Within Groups	418.490	400	1.046		
	Total	422.158	403			
I11	Between Groups	4.173	3	1.391	1.310	.271
	Within Groups	423.688	399	1.062		
	Total	427.861	402			
I12	Between Groups	3.338	3	1.113	1.514	.210
	Within Groups	293.307	399	.735		
	Total	296.645	402			

		Sum of Squares	df	Mean Square	F	Sig.
I13	Between Groups	1.793	3	.598	.857	.463
	Within Groups	279.452	401	.697		
	Total	281.244	404			
I14	Between Groups	5.778	3	1.926	1.788	.149
	Within Groups	431.866	401	1.077		
	Total	437.644	404			
I15	Between Groups	10.743	3	3.581	3.238	.022
	Within Groups	442.373	400	1.106		
	Total	453.116	403			
I16	Between Groups	12.181	3	4.060	3.338	.019
	Within Groups	486.519	400	1.216		
	Total	498.700	403			
I17	Between Groups	.218	3	.073	.073	.974
	Within Groups	394.080	398	.990		
	Total	394.299	401			
I18	Between Groups	3.201	3	1.067	1.918	.126
	Within Groups	222.561	400	.556		
	Total	225.762	403			
I19	Between Groups	1.824	3	.608	.731	.534
	Within Groups	332.599	400	.831		
	Total	334.423	403			
I20	Between Groups	2.656	3	.885	.649	.584
	Within Groups	545.728	400	1.364		
	Total	548.384	403			
I21	Between Groups	2.521	3	.840	1.022	.383
	Within Groups	328.805	400	.822		
	Total	331.327	403			
I22	Between Groups	3.181	3	1.060	.999	.393
	Within Groups	426.868	402	1.062		
	Total	430.049	405			
I23	Between Groups	22.368	3	7.456	5.083	.002
	Within Groups	586.760	400	1.467		
	Total	609.129	403			
I24	Between Groups	6.404	3	2.135	1.883	.132
	Within Groups	452.276	399	1.134		
	Total	458.680	402			
I25	Between Groups	.491	3	.164	.303	.823
	Within Groups	216.487	401	.540		
	Total	216.978	404			

		Sum of Squares	df	Mean Square	F	Sig.
I26	Between Groups	.806	3	.269	.426	.734
	Within Groups	253.254	402	.630		
	Total	254.059	405			
I27	Between Groups	2.137	3	.712	.558	.643
	Within Groups	513.353	402	1.277		
	Total	515.490	405			
I28	Between Groups	3.285	3	1.095	1.606	.188
	Within Groups	274.205	402	.682		
	Total	277.490	405			
I29	Between Groups	5.398	3	1.799	1.501	.214
	Within Groups	481.806	402	1.199		
	Total	487.204	405			
I30	Between Groups	4.959	3	1.653	1.360	.255
	Within Groups	487.476	401	1.216		
	Total	492.435	404			
I31	Between Groups	7.497	3	2.499	2.154	.093
	Within Groups	464.055	400	1.160		
	Total	471.552	403			
I32	Between Groups	2.943	3	.981	1.649	.178
	Within Groups	238.499	401	.595		
	Total	241.442	404			
I33	Between Groups	2.948	3	.983	1.190	.313
	Within Groups	330.228	400	.826		
	Total	333.176	403			
I34	Between Groups	.654	3	.218	.213	.887
	Within Groups	409.559	401	1.021		
	Total	410.212	404			
I35	Between Groups	.440	3	.147	.144	.933
	Within Groups	408.998	402	1.017		
	Total	409.438	405			
I36	Between Groups	.627	3	.209	.218	.884
	Within Groups	382.700	400	.957		
	Total	383.327	403			
I37	Between Groups	.157	3	.052	.070	.976
	Within Groups	300.421	401	.749		
	Total	300.578	404			
I38	Between Groups	14.718	3	4.906	4.182	.006
	Within Groups	471.626	402	1.173		
	Total	486.345	405			

		Sum of Squares	df	Mean Square	F	Sig.
I39	Between Groups	2.709	3	.903	.500	.682
	Within Groups	720.477	399	1.806		
	Total	723.186	402			
I40	Between Groups	4.828	3	1.609	.885	.449
	Within Groups	731.014	402	1.818		
	Total	735.842	405			
I41	Between Groups	2.114	3	.705	.759	.517
	Within Groups	373.041	402	.928		
	Total	375.155	405			
I42	Between Groups	1.672	3	.557	.458	.712
	Within Groups	487.844	401	1.217		
	Total	489.516	404			
I43	Between Groups	2.562	3	.854	.444	.722
	Within Groups	773.428	402	1.924		
	Total	775.990	405			
I44	Between Groups	.457	3	.152	.122	.947
	Within Groups	499.831	399	1.253		
	Total	500.288	402			
I45	Between Groups	2.087	3	.696	.482	.695
	Within Groups	577.505	400	1.444		
	Total	579.592	403			
I46	Between Groups	19.627	3	6.542	4.215	.006
	Within Groups	622.373	401	1.552		
	Total	642.000	404			
I47	Between Groups	4.690	3	1.563	1.398	.243
	Within Groups	449.645	402	1.119		
	Total	454.335	405			
I48	Between Groups	.970	3	.323	.453	.715
	Within Groups	285.820	401	.713		
	Total	286.790	404			
I49	Between Groups	.461	3	.154	.184	.907
	Within Groups	331.402	398	.833		
	Total	331.863	401			
I50	Between Groups	1.252	3	.417	.900	.441
	Within Groups	185.006	399	.464		
	Total	186.258	402			
I51	Between Groups	.752	3	.251	.390	.761
	Within Groups	257.890	401	.643		
	Total	258.642	404			
I52	Between Groups	.785	3	.262	.311	.817
	Within Groups	332.812	396	.840		
	Total	333.598	399			

**Appendix 7 - Normality, homoscedasticity (Levene test), correlations, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test.**

One-Sample Kolmogorov-Smirnov Test														
		I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13
N		401	401	401	404	402	405	404	405	404	404	403	403	405
Normal Parameters <sup>a,b</sup>	Mean	6.0224	6.1796	6.0324	6.453	6.3955	6.4938	6.3045	6.6148	6.4505	6.198	6.2953	6.5161	6.5037
	Std. Deviation	1.16275	1.03329	1.07072	1.09148	0.88787	0.99905	1.12225	0.78335	1.05672	1.02349	1.03166	0.85902	0.83436
Most Extreme Differences	Absolute	0.271	0.285	0.246	0.410	0.327	0.420	0.356	0.427	0.389	0.296	0.323	0.406	0.393
	Positive	0.200	0.214	0.183	0.308	0.248	0.306	0.268	0.311	0.302	0.217	0.247	0.287	0.276
	Negative	-0.271	-0.285	-0.246	-0.410	-0.327	-0.420	-0.356	-0.427	-0.389	-0.296	-0.323	-0.406	-0.393
Kolmogorov-Smirnov Z		5.428	5.71	4.927	8.235	6.549	8.447	7.157	8.589	7.82	5.944	6.493	8.144	7.912
Asymp. Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exact Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Point Probability		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
a Test distribution is Normal.														
b Calculated from data.														

One-Sample Kolmogorov-Smirnov Test														
		I14	I15	I16	I17	I18	I19	I20	I21	I22	I23	I24	I25	I26
N		405	404	404	402	404	404	404	404	406	404	403	405	406
Normal Parameters <sup>a,b</sup>	Mean	6.1037	6.2104	6.0272	6.5224	6.6139	6.3936	6.146	6.5644	6.2217	5.7327	6.3995	6.6741	6.6158
	Std. Deviation	1.04081	1.06036	1.11242	0.99161	0.74847	0.91095	1.16651	0.90673	1.03046	1.22942	1.06817	0.73285	0.79203
Most Extreme Differences	Absolute	0.262	0.292	0.237	0.409	0.427	0.346	0.283	0.415	0.300	0.212	0.380	0.442	0.433
	Positive	0.195	0.228	0.191	0.315	0.303	0.253	0.232	0.315	0.225	0.151	0.287	0.328	0.314
	Negative	-0.262	-0.292	-0.237	-0.409	-0.427	-0.346	-0.283	-0.415	-0.300	-0.212	-0.380	-0.442	-0.433
Kolmogorov-Smirnov Z		5.277	5.86	4.769	8.198	8.587	6.959	5.684	8.336	6.037	4.267	7.638	8.897	8.715
Asymp. Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exact Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Point Probability		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
a Test distribution is Normal.														
b Calculated from data.														

One-Sample Kolmogorov-Smirnov Test														
		I27	I28	I29	I30	I31	I32	I33	I34	I35	I36	I37	I38	I39
N		406	406	406	405	404	405	404	405	406	404	405	406	403
Normal Parameters <sup>a,b</sup>	Mean	6.2192	6.4951	6.2094	6.1062	6.1955	6.6198	6.3441	6.3506	6.5123	6.4356	6.6074	6.2414	5.7519
	Std. Deviation	1.12819	0.82774	1.0968	1.10404	1.08171	0.77306	0.90925	1.00766	1.00546	0.97529	0.86256	1.09583	1.34126
Most Extreme Differences	Absolute	0.315	0.374	0.301	0.248	0.271	0.427	0.324	0.335	0.396	0.370	0.426	0.327	0.211
	Positive	0.244	0.271	0.235	0.209	0.229	0.311	0.235	0.260	0.314	0.281	0.325	0.244	0.176
	Negative	-0.315	-0.374	-0.301	-0.248	-0.271	-0.427	-0.324	-0.335	-0.396	-0.370	-0.426	-0.327	-0.211
Kolmogorov-Smirnov Z		6.34	7.544	6.074	4.985	5.456	8.591	6.514	6.75	7.97	7.428	8.575	6.59	4.238
Asymp. Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exact Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Point Probability		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
a Test distribution is Normal.														
b Calculated from data.														

One-Sample Kolmogorov-Smirnov Test														
		I40	I41	I42	I43	I44	I45	I46	I47	I48	I49	I50	I51	I52
N		406	406	405	406	403	404	405	406	405	402	403	405	400
Normal Parameters <sup>a,b</sup>	Mean	5.8768	6.3966	6.0346	5.7192	6.1911	5.7302	6	6.3498	6.6049	6.5398	6.6452	6.5802	6.4225
	Std. Deviation	1.34792	0.96245	1.10076	1.38421	1.11557	1.19925	1.2606	1.05916	0.84254	0.90972	0.68068	0.80013	0.91438
Most Extreme Differences	Absolute	0.251	0.353	0.257	0.218	0.299	0.220	0.270	0.354	0.426	0.405	0.428	0.404	0.371
	Positive	0.202	0.265	0.190	0.177	0.234	0.145	0.214	0.270	0.320	0.306	0.301	0.300	0.264
	Negative	-0.251	-0.353	-0.257	-0.218	-0.299	-0.220	-0.270	-0.354	-0.426	-0.405	-0.428	-0.404	-0.371
Kolmogorov-Smirnov Z		5.054	7.111	5.166	4.399	6.009	4.426	5.436	7.123	8.575	8.12	8.601	8.126	7.423
Asymp. Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exact Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Point Probability		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
a Test distribution is Normal.														
b Calculated from data.														

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
I1	0.77	3	397	0.511
I2	1.655	3	397	0.176
I3	0.658	3	397	0.578
I4	8.3	3	400	0.000
I5	1.209	3	398	0.306
I6	10.244	3	401	0.000
I7	0.828	3	400	0.479
I8	0.685	3	401	0.562
I9	2.378	3	400	0.069
I10	1.805	3	400	0.146
I11	1.16	3	399	0.325
I12	4.986	3	399	0.002
I13	2.084	3	401	0.102
I14	0.678	3	401	0.566
I15	3.172	3	400	0.024
I16	2.522	3	400	0.057
I17	0.525	3	398	0.666
I18	2.428	3	400	0.065
I19	2.59	3	400	0.052
I20	1.918	3	400	0.126
I21	2.12	3	400	0.097
I22	0.307	3	402	0.820
I23	2.169	3	400	0.091
I24	4.678	3	399	0.003
I25	1.185	3	401	0.315
I26	0.525	3	402	0.666
I27	0.427	3	402	0.734
I28	5.818	3	402	0.001
I29	1.865	3	402	0.135
I30	1.225	3	401	0.300
I31	1.791	3	400	0.148
I32	3.822	3	401	0.010
I33	1.193	3	400	0.312
I34	0.772	3	401	0.510
I35	0.062	3	402	0.980
I36	0.043	3	400	0.988
I37	0.102	3	401	0.959
I38	1.565	3	402	0.197
I39	0.915	3	399	0.434
I40	0.235	3	402	0.872
I41	2.189	3	402	0.089
I42	0.376	3	401	0.771
I43	1.626	3	402	0.183
I44	0.591	3	399	0.621
I45	0.441	3	400	0.724
I46	1.376	3	401	0.250
I47	0.949	3	402	0.417
I48	0.393	3	401	0.758
I49	0.564	3	398	0.639
I50	1.299	3	399	0.274
I51	0.733	3	401	0.533
I52	2.555	3	396	0.055

Correlations	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13
I1	1.000	0.375**	0.425**	0.241**	0.279**	0.268**	0.218**	0.328**	0.226**	0.261**	0.244**	0.207**	0.305**
I2	0.375**	1.000	0.448**	0.387**	0.573**	0.417**	0.362**	0.387**	0.301**	0.268**	0.260**	0.270**	0.291**
I3	0.425**	0.448**	1.000	0.360**	0.522**	0.400**	0.290**	0.419**	0.258**	0.347**	0.230**	0.294**	0.259**
I4	0.241**	0.387**	0.360**	1.000	0.404**	0.486**	0.621**	0.506**	0.593**	0.368**	0.344**	0.428**	0.392**
I5	0.279**	0.573**	0.522**	0.404**	1.000	0.440**	0.392**	0.445**	0.387**	0.288**	0.294**	0.286**	0.257**
I6	0.268**	0.417**	0.400**	0.486**	0.440**	1.000	0.563**	0.525**	0.454**	0.428**	0.454**	0.384**	0.517**
I7	0.218**	0.362**	0.290**	0.621**	0.392**	0.563**	1.000	0.495**	0.592**	0.433**	0.379**	0.394**	0.435**
I8	0.328**	0.387**	0.419**	0.506**	0.445**	0.525**	0.495**	1.000	0.558**	0.429**	0.384**	0.417**	0.495**
I9	0.226**	0.301**	0.258**	0.593**	0.387**	0.454**	0.592**	0.558**	1.000	0.515**	0.426**	0.450**	0.463**
I10	0.261**	0.268**	0.347**	0.368**	0.288**	0.428**	0.433**	0.429**	0.515**	1.000	0.566**	0.502**	0.464**
I11	0.244**	0.260**	0.230**	0.344**	0.294**	0.454**	0.379**	0.384**	0.426**	0.566**	1.000	0.567**	0.618**
I12	0.207**	0.270**	0.294**	0.428**	0.286**	0.384**	0.394**	0.417**	0.450**	0.502**	0.567**	1.000	0.603**
I13	0.305**	0.291**	0.259**	0.392**	0.257**	0.517**	0.435**	0.495**	0.463**	0.464**	0.618**	0.603**	1.000
I14	0.256**	0.254**	0.273**	0.298**	0.265**	0.393**	0.461**	0.410**	0.491**	0.621**	0.502**	0.459**	0.592**
I15	0.213**	0.244**	0.336**	0.401**	0.276**	0.491**	0.508**	0.343**	0.466**	0.516**	0.428**	0.416**	0.455**
I16	0.239**	0.244**	0.315**	0.328**	0.281**	0.463**	0.495**	0.342**	0.451**	0.613**	0.483**	0.428**	0.506**
I17	0.140**	0.301**	0.231**	0.509**	0.289**	0.404**	0.516**	0.399**	0.530**	0.397**	0.397**	0.396**	0.433**
I18	0.276**	0.370**	0.305**	0.336**	0.348**	0.308**	0.329**	0.489**	0.377**	0.313**	0.340**	0.303**	0.355**
I19	0.351**	0.348**	0.270**	0.267**	0.317**	0.393**	0.387**	0.362**	0.366**	0.440**	0.445**	0.386**	0.438**
I20	0.261**	0.312**	0.307**	0.347**	0.290**	0.342**	0.441**	0.371**	0.403**	0.407**	0.452**	0.414**	0.495**
I21	0.206**	0.333**	0.308**	0.521**	0.274**	0.348**	0.503**	0.489**	0.508**	0.352**	0.395**	0.456**	0.414**
I22	0.266**	0.173**	0.254**	0.190**	0.210**	0.227**	0.280**	0.262**	0.266**	0.407**	0.361**	0.318**	0.384**
I23	0.286**	0.190**	0.260**	0.166**	0.174**	0.287**	0.199**	0.162**	0.213**	0.325**	0.317**	0.281**	0.306**
I24	0.223**	0.249**	0.285**	0.386**	0.300**	0.348**	0.349**	0.316**	0.493**	0.376**	0.318**	0.374**	0.334**
I25	0.221**	0.275**	0.223**	0.378**	0.279**	0.325**	0.380**	0.381**	0.562**	0.397**	0.351**	0.359**	0.387**
I26	0.215**	0.179**	0.187**	0.363**	0.227**	0.244**	0.313**	0.315**	0.457**	0.336**	0.339**	0.323**	0.376**
I27	0.207**	0.249**	0.233**	0.310**	0.263**	0.362**	0.309**	0.286**	0.414**	0.325**	0.349**	0.348**	0.413**
I28	0.176**	0.291**	0.343**	0.271**	0.402**	0.327**	0.310**	0.317**	0.389**	0.409**	0.347**	0.400**	0.431**
I29	0.231**	0.266**	0.264**	0.226**	0.261**	0.336**	0.340**	0.274**	0.344**	0.356**	0.342**	0.293**	0.348**
I30	0.317**	0.259**	0.231**	0.243**	0.292**	0.341**	0.334**	0.312**	0.344**	0.336**	0.380**	0.325**	0.351**

\*\* Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Correlations	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13
I31	0.269**	0.336**	0.279**	0.317**	0.336**	0.390**	0.376**	0.349**	0.384**	0.367**	0.364**	0.354**	0.392**
I32	0.195**	0.239**	0.147**	0.291**	0.256**	0.341**	0.370**	0.356**	0.464**	0.405**	0.423**	0.310**	0.388**
I33	0.220**	0.215**	0.307**	0.272**	0.324**	0.416**	0.334**	0.326**	0.400**	0.477**	0.446**	0.414**	0.390**
I34	0.192**	0.233**	0.258**	0.368**	0.240**	0.394**	0.354**	0.345**	0.417**	0.362**	0.335**	0.327**	0.388**
I35	0.195**	0.230**	0.166**	0.433**	0.191**	0.332**	0.398**	0.279**	0.509**	0.376**	0.359**	0.348**	0.379**
I36	0.183**	0.251**	0.197**	0.306**	0.254**	0.270**	0.361**	0.228**	0.420**	0.389**	0.338**	0.299**	0.333**
I37	0.232**	0.270**	0.264**	0.438**	0.227**	0.337**	0.391**	0.267**	0.472**	0.388**	0.422**	0.417**	0.425**
I38	0.201**	0.170**	0.178**	0.234**	0.138**	0.162**	0.315**	0.296**	0.390**	0.238**	0.266**	0.195**	0.229**
I39	0.266**	0.211**	0.246**	0.244**	0.187**	0.260**	0.356**	0.264**	0.345**	0.355**	0.311**	0.294**	0.363**
I40	0.166**	0.166**	0.157**	0.277**	0.127*	0.209**	0.334**	0.283**	0.326**	0.283**	0.287**	0.282**	0.289**
I41	0.180**	0.187**	0.179**	0.333**	0.225**	0.329**	0.384**	0.304**	0.410**	0.391**	0.368**	0.366**	0.405**
I42	0.290**	0.189**	0.243**	0.201**	0.255**	0.313**	0.262**	0.300**	0.308**	0.326**	0.374**	0.295**	0.388**
I43	0.199**	0.154**	0.164**	0.196**	0.188**	0.195**	0.212**	0.195**	0.258**	0.242**	0.166**	0.145**	0.223**
I44	0.249**	0.158**	0.161**	0.176**	0.176**	0.279**	0.224**	0.250**	0.230**	0.247**	0.326**	0.257**	0.375**
I45	0.259**	0.140**	0.195**	0.191**	0.196**	0.253**	0.269**	0.217**	0.233**	0.279**	0.302**	0.238**	0.368**
I46	0.075	0.140**	0.157**	0.075	0.208**	0.126*	0.199**	0.163**	0.201**	0.233**	0.232**	0.155**	0.306**
I47	0.130**	0.145**	0.127*	0.337**	0.204**	0.208**	0.321**	0.243**	0.433**	0.263**	0.251**	0.263**	0.317**
I48	0.253**	0.253**	0.309**	0.297**	0.265**	0.176**	0.268**	0.316**	0.303**	0.207**	0.226**	0.213**	0.241**
I49	0.288**	0.269**	0.328**	0.290**	0.274**	0.251**	0.269**	0.339**	0.300**	0.243**	0.236**	0.245**	0.239**
I50	0.255**	0.272**	0.284**	0.257**	0.293**	0.228**	0.274**	0.330**	0.330**	0.213**	0.271**	0.288**	0.249**
I51	0.186**	0.239**	0.282**	0.153**	0.274**	0.244**	0.219**	0.278**	0.286**	0.282**	0.259**	0.232**	0.272**
I52	0.194**	0.165**	0.210**	0.193**	0.243**	0.164**	0.233**	0.253**	0.289**	0.292**	0.284**	0.208**	0.148**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Pearson Correlation

Correlations	I14	I15	I16	I17	I18	I19	I20	I21	I22	I23	I24	I25	I26
I1	0.256**	0.213**	0.239**	0.140**	0.276**	0.351**	0.261**	0.206**	0.266**	0.286**	0.223**	0.221**	0.215**
I2	0.254**	0.244**	0.244**	0.301**	0.370**	0.348**	0.312**	0.333**	0.173**	0.190**	0.249**	0.275**	0.179**
I3	0.273**	0.336**	0.315**	0.231**	0.305**	0.270**	0.307**	0.308**	0.254**	0.260**	0.285**	0.223**	0.187**
I4	0.298**	0.401**	0.328**	0.509**	0.336**	0.267**	0.347**	0.521**	0.190**	0.166**	0.386**	0.378**	0.363**
I5	0.265**	0.276**	0.281**	0.289**	0.348**	0.317**	0.290**	0.274**	0.210**	0.174**	0.300**	0.279**	0.227**
I6	0.393**	0.491**	0.463**	0.404**	0.308**	0.393**	0.342**	0.348**	0.227**	0.287**	0.348**	0.325**	0.244**
I7	0.461**	0.508**	0.495**	0.516**	0.329**	0.387**	0.441**	0.503**	0.280**	0.199**	0.349**	0.380**	0.313**
I8	0.410**	0.343**	0.342**	0.399**	0.489**	0.362**	0.371**	0.489**	0.262**	0.162**	0.316**	0.381**	0.315**
I9	0.491**	0.466**	0.451**	0.530**	0.377**	0.366**	0.403**	0.508**	0.266**	0.213**	0.493**	0.562**	0.457**
I10	0.621**	0.516**	0.613**	0.397**	0.313**	0.440**	0.407**	0.352**	0.407**	0.325**	0.376**	0.397**	0.336**
I11	0.502**	0.428**	0.483**	0.397**	0.340**	0.445**	0.452**	0.395**	0.361**	0.317**	0.318**	0.351**	0.339**
I12	0.459**	0.416**	0.428**	0.396**	0.303**	0.386**	0.414**	0.456**	0.318**	0.281**	0.374**	0.359**	0.323**
I13	0.592**	0.455**	0.506**	0.433**	0.355**	0.438**	0.495**	0.414**	0.384**	0.306**	0.334**	0.387**	0.376**
I14	1.000	0.556**	0.666**	0.405**	0.299**	0.443**	0.533**	0.391**	0.449**	0.366**	0.360**	0.411**	0.388**
I15	0.556**	1.000	0.683**	0.497**	0.243**	0.437**	0.427**	0.478**	0.363**	0.452**	0.442**	0.430**	0.398**
I16	0.666**	0.683**	1.000	0.493**	0.244**	0.411**	0.477**	0.447**	0.462**	0.407**	0.461**	0.390**	0.366**
I17	0.405**	0.497**	0.493**	1.000	0.450**	0.419**	0.464**	0.688**	0.333**	0.233**	0.493**	0.523**	0.522**
I18	0.299**	0.243**	0.244**	0.450**	1.000	0.478**	0.425**	0.499**	0.329**	0.178**	0.307**	0.381**	0.337**
I19	0.443**	0.437**	0.411**	0.419**	0.478**	1.000	0.548**	0.441**	0.406**	0.371**	0.324**	0.376**	0.365**
I20	0.533**	0.427**	0.477**	0.464**	0.425**	0.548**	1.000	0.522**	0.469**	0.358**	0.373**	0.421**	0.391**
I21	0.391**	0.478**	0.447**	0.688**	0.499**	0.441**	0.522**	1.000	0.384**	0.267**	0.454**	0.538**	0.445**
I22	0.449**	0.363**	0.462**	0.333**	0.329**	0.406**	0.469**	0.384**	1.000	0.414**	0.338**	0.374**	0.356**
I23	0.366**	0.452**	0.407**	0.233**	0.178**	0.371**	0.358**	0.267**	0.414**	1.000	0.322**	0.258**	0.239**
I24	0.360**	0.442**	0.461**	0.493**	0.307**	0.324**	0.373**	0.454**	0.338**	0.322**	1.000	0.668**	0.516**
I25	0.411**	0.430**	0.390**	0.523**	0.381**	0.376**	0.421**	0.538**	0.374**	0.258**	0.668**	1.000	0.616**
I26	0.388**	0.398**	0.366**	0.522**	0.337**	0.365**	0.391**	0.445**	0.356**	0.239**	0.516**	0.616**	1.000
I27	0.480**	0.428**	0.449**	0.512**	0.331**	0.372**	0.480**	0.434**	0.385**	0.397**	0.493**	0.502**	0.528**
I28	0.411**	0.401**	0.397**	0.455**	0.425**	0.360**	0.457**	0.433**	0.357**	0.246**	0.457**	0.527**	0.498**
I29	0.371**	0.403**	0.396**	0.482**	0.377**	0.446**	0.379**	0.427**	0.394**	0.389**	0.349**	0.371**	0.374**
I30	0.391**	0.371**	0.416**	0.446**	0.318**	0.438**	0.405**	0.402**	0.332**	0.322**	0.391**	0.413**	0.454**

\*\* Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Correlations	I14	I15	I16	I17	I18	I19	I20	I21	I22	I23	I24	I25	I26
I31	0.375**	0.381**	0.331**	0.460**	0.421**	0.408**	0.391**	0.426**	0.316**	0.272**	0.366**	0.422**	0.432**
I32	0.378**	0.393**	0.372**	0.492**	0.308**	0.500**	0.391**	0.489**	0.335**	0.266**	0.418**	0.612**	0.532**
I33	0.416**	0.487**	0.497**	0.445**	0.300**	0.398**	0.462**	0.426**	0.346**	0.332**	0.464**	0.484**	0.434**
I34	0.332**	0.412**	0.404**	0.592**	0.417**	0.413**	0.344**	0.529**	0.402**	0.216**	0.415**	0.500**	0.448**
I35	0.408**	0.443**	0.466**	0.659**	0.364**	0.376**	0.460**	0.570**	0.364**	0.269**	0.514**	0.593**	0.552**
I36	0.450**	0.428**	0.422**	0.566**	0.347**	0.444**	0.489**	0.493**	0.386**	0.287**	0.447**	0.546**	0.484**
I37	0.378**	0.410**	0.470**	0.612**	0.390**	0.387**	0.470**	0.544**	0.387**	0.227**	0.540**	0.605**	0.535**
I38	0.325**	0.306**	0.285**	0.365**	0.270**	0.352**	0.447**	0.390**	0.248**	0.204**	0.315**	0.431**	0.400**
I39	0.480**	0.424**	0.481**	0.449**	0.279**	0.399**	0.512**	0.442**	0.362**	0.302**	0.297**	0.307**	0.335**
I40	0.369**	0.335**	0.348**	0.331**	0.207**	0.250**	0.361**	0.331**	0.221**	0.216**	0.272**	0.287**	0.272**
I41	0.411**	0.469**	0.501**	0.457**	0.252**	0.343**	0.364**	0.419**	0.282**	0.282**	0.458**	0.421**	0.372**
I42	0.444**	0.370**	0.403**	0.348**	0.310**	0.428**	0.473**	0.330**	0.299**	0.255**	0.296**	0.362**	0.407**
I43	0.253**	0.236**	0.306**	0.198**	0.216**	0.164**	0.224**	0.217**	0.167**	0.174**	0.203**	0.256**	0.149**
I44	0.344**	0.346**	0.328**	0.287**	0.220**	0.345**	0.345**	0.287**	0.275**	0.301**	0.291**	0.297**	0.314**
I45	0.396**	0.331**	0.389**	0.276**	0.245**	0.330**	0.434**	0.268**	0.267**	0.338**	0.259**	0.291**	0.337**
I46	0.347**	0.252**	0.319**	0.270**	0.184**	0.269**	0.368**	0.288**	0.240**	0.202**	0.176**	0.222**	0.282**
I47	0.333**	0.316**	0.353**	0.406**	0.273**	0.304**	0.385**	0.492**	0.255**	0.233**	0.456**	0.501**	0.481**
I48	0.205**	0.188**	0.203**	0.297**	0.386**	0.230**	0.327**	0.461**	0.249**	0.129**	0.321**	0.420**	0.350**
I49	0.211**	0.274**	0.269**	0.311**	0.334**	0.306**	0.356**	0.449**	0.295**	0.229**	0.355**	0.381**	0.371**
I50	0.203**	0.246**	0.221**	0.373**	0.424**	0.355**	0.309**	0.469**	0.290**	0.167**	0.328**	0.462**	0.422**
I51	0.323**	0.359**	0.315**	0.331**	0.278**	0.398**	0.348**	0.358**	0.302**	0.220**	0.260**	0.354**	0.322**
I52	0.258**	0.270**	0.299**	0.309**	0.245**	0.313**	0.332**	0.344**	0.256**	0.174**	0.277**	0.374**	0.332**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Pearson Correlation

Correlations	I27	I28	I29	I30	I31	I32	I33	I34	I35	I36	I37	I38	I39
I1	0.207**	0.176**	0.231**	0.317**	0.269**	0.195**	0.220**	0.192**	0.195**	0.183**	0.232**	0.201**	0.266**
I2	0.249**	0.291**	0.266**	0.259**	0.336**	0.239**	0.215**	0.233**	0.230**	0.251**	0.270**	0.170**	0.211**
I3	0.233**	0.343**	0.264**	0.231**	0.279**	0.147**	0.307**	0.258**	0.166**	0.197**	0.264**	0.178**	0.246**
I4	0.310**	0.271**	0.226**	0.243**	0.317**	0.291**	0.272**	0.368**	0.433**	0.306**	0.438**	0.234**	0.244**
I5	0.263**	0.402**	0.261**	0.292**	0.336**	0.256**	0.324**	0.240**	0.191**	0.254**	0.227**	0.138**	0.187**
I6	0.362**	0.327**	0.336**	0.341**	0.390**	0.341**	0.416**	0.394**	0.332**	0.270**	0.337**	0.162**	0.260**
I7	0.309**	0.310**	0.340**	0.334**	0.376**	0.370**	0.334**	0.354**	0.398**	0.361**	0.391**	0.315**	0.356**
I8	0.286**	0.317**	0.274**	0.312**	0.349**	0.356**	0.326**	0.345**	0.279**	0.228**	0.267**	0.296**	0.264**
I9	0.414**	0.389**	0.344**	0.344**	0.384**	0.464**	0.400**	0.417**	0.509**	0.420**	0.472**	0.390**	0.345**
I10	0.325**	0.409**	0.356**	0.336**	0.367**	0.405**	0.477**	0.362**	0.376**	0.389**	0.388**	0.238**	0.355**
I11	0.349**	0.347**	0.342**	0.380**	0.364**	0.423**	0.446**	0.335**	0.359**	0.338**	0.422**	0.266**	0.311**
I12	0.348**	0.400**	0.293**	0.325**	0.354**	0.310**	0.414**	0.327**	0.348**	0.299**	0.417**	0.195**	0.294**
I13	0.413**	0.431**	0.348**	0.351**	0.392**	0.388**	0.390**	0.388**	0.379**	0.333**	0.425**	0.229**	0.363**
I14	0.480**	0.411**	0.371**	0.391**	0.375**	0.378**	0.416**	0.332**	0.408**	0.450**	0.378**	0.325**	0.480**
I15	0.428**	0.401**	0.403**	0.371**	0.381**	0.393**	0.487**	0.412**	0.443**	0.428**	0.410**	0.306**	0.424**
I16	0.449**	0.397**	0.396**	0.416**	0.331**	0.372**	0.497**	0.404**	0.466**	0.422**	0.470**	0.285**	0.481**
I17	0.512**	0.455**	0.482**	0.446**	0.460**	0.492**	0.445**	0.592**	0.659**	0.566**	0.612**	0.365**	0.449**
I18	0.331**	0.425**	0.377**	0.318**	0.421**	0.308**	0.300**	0.417**	0.364**	0.347**	0.390**	0.270**	0.279**
I19	0.372**	0.360**	0.446**	0.438**	0.408**	0.500**	0.398**	0.413**	0.376**	0.444**	0.387**	0.352**	0.399**
I20	0.480**	0.457**	0.379**	0.405**	0.391**	0.391**	0.462**	0.344**	0.460**	0.489**	0.470**	0.447**	0.512**
I21	0.434**	0.433**	0.427**	0.402**	0.426**	0.489**	0.426**	0.529**	0.570**	0.493**	0.544**	0.390**	0.442**
I22	0.385**	0.357**	0.394**	0.332**	0.316**	0.335**	0.346**	0.402**	0.364**	0.386**	0.387**	0.248**	0.362**
I23	0.397**	0.246**	0.389**	0.322**	0.272**	0.266**	0.332**	0.216**	0.269**	0.287**	0.227**	0.204**	0.302**
I24	0.493**	0.457**	0.349**	0.391**	0.366**	0.418**	0.464**	0.415**	0.514**	0.447**	0.540**	0.315**	0.297**
I25	0.502**	0.527**	0.371**	0.413**	0.422**	0.612**	0.484**	0.500**	0.593**	0.546**	0.605**	0.431**	0.307**
I26	0.528**	0.498**	0.374**	0.454**	0.432**	0.532**	0.434**	0.448**	0.552**	0.484**	0.535**	0.400**	0.335**
I27	1.000	0.468**	0.428**	0.438**	0.381**	0.410**	0.429**	0.401**	0.539**	0.577**	0.469**	0.377**	0.395**
I28	0.468**	1.000	0.451**	0.436**	0.485**	0.458**	0.452**	0.443**	0.448**	0.458**	0.525**	0.325**	0.367**
I29	0.428**	0.451**	1.000	0.620**	0.472**	0.437**	0.369**	0.460**	0.469**	0.461**	0.439**	0.346**	0.447**
I30	0.438**	0.436**	0.620**	1.000	0.530**	0.508**	0.442**	0.427**	0.443**	0.436**	0.454**	0.353**	0.389**

\*\* Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Correlations	I27	I28	I29	I30	I31	I32	I33	I34	I35	I36	I37	I38	I39
I31	0.381**	0.485**	0.472**	0.530**	1.000	0.516**	0.488**	0.473**	0.463**	0.502**	0.479**	0.357**	0.469**
I32	0.410**	0.458**	0.437**	0.508**	0.516**	1.000	0.529**	0.423**	0.489**	0.497**	0.492**	0.370**	0.338**
I33	0.429**	0.452**	0.369**	0.442**	0.488**	0.529**	1.000	0.484**	0.496**	0.477**	0.447**	0.320**	0.364**
I34	0.401**	0.443**	0.460**	0.427**	0.473**	0.423**	0.484**	1.000	0.560**	0.501**	0.557**	0.329**	0.435**
I35	0.539**	0.448**	0.469**	0.443**	0.463**	0.489**	0.496**	0.560**	1.000	0.637**	0.665**	0.412**	0.474**
I36	0.577**	0.458**	0.461**	0.436**	0.502**	0.497**	0.477**	0.501**	0.637**	1.000	0.613**	0.429**	0.481**
I37	0.469**	0.525**	0.439**	0.454**	0.479**	0.492**	0.447**	0.557**	0.665**	0.613**	1.000	0.471**	0.489**
I38	0.377**	0.325**	0.346**	0.353**	0.357**	0.370**	0.320**	0.329**	0.412**	0.429**	0.471**	1.000	0.545**
I39	0.395**	0.367**	0.447**	0.389**	0.469**	0.338**	0.364**	0.435**	0.474**	0.481**	0.489**	0.545**	1.000
I40	0.269**	0.219**	0.290**	0.277**	0.307**	0.258**	0.272**	0.244**	0.331**	0.326**	0.334**	0.388**	0.446**
I41	0.370**	0.367**	0.403**	0.400**	0.423**	0.491**	0.481**	0.372**	0.560**	0.464**	0.473**	0.274**	0.397**
I42	0.420**	0.386**	0.412**	0.393**	0.366**	0.376**	0.373**	0.347**	0.414**	0.407**	0.431**	0.426**	0.444**
I43	0.237**	0.229**	0.258**	0.178**	0.180**	0.183**	0.174**	0.166**	0.253**	0.282**	0.228**	0.248**	0.334**
I44	0.352**	0.324**	0.293**	0.303**	0.313**	0.303**	0.287**	0.283**	0.267**	0.295**	0.281**	0.349**	0.380**
I45	0.403**	0.314**	0.326**	0.399**	0.351**	0.303**	0.344**	0.321**	0.310**	0.353**	0.329**	0.382**	0.437**
I46	0.264**	0.218**	0.310**	0.286**	0.280**	0.226**	0.236**	0.261**	0.259**	0.334**	0.238**	0.263**	0.395**
I47	0.421**	0.410**	0.290**	0.311**	0.308**	0.395**	0.389**	0.416**	0.501**	0.425**	0.464**	0.350**	0.364**
I48	0.259**	0.331**	0.201**	0.248**	0.317**	0.316**	0.271**	0.275**	0.309**	0.264**	0.372**	0.369**	0.220**
I49	0.299**	0.294**	0.267**	0.291**	0.410**	0.347**	0.303**	0.308**	0.316**	0.287**	0.381**	0.282**	0.308**
I50	0.307**	0.373**	0.269**	0.344**	0.356**	0.466**	0.299**	0.368**	0.366**	0.325**	0.404**	0.368**	0.277**
I51	0.359**	0.341**	0.297**	0.289**	0.344**	0.377**	0.379**	0.288**	0.304**	0.387**	0.327**	0.344**	0.363**
I52	0.267**	0.334**	0.269**	0.300**	0.231**	0.388**	0.362**	0.284**	0.315**	0.370**	0.318**	0.340**	0.294**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Pearson Correlation

Correlations	I40	I41	I42	I43	I44	I45	I46	I47	I48	I49	I50	I51	I52
I1	0.166**	0.180**	0.290**	0.199**	0.249**	0.259**	0.075	0.130**	0.253**	0.288**	0.255**	0.186**	0.194**
I2	0.166**	0.187**	0.189**	0.154**	0.158**	0.140**	0.140**	0.145**	0.253**	0.269**	0.272**	0.239**	0.165**
I3	0.157**	0.179**	0.243**	0.164**	0.161**	0.195**	0.157**	0.127*	0.309**	0.328**	0.284**	0.282**	0.210**
I4	0.277**	0.333**	0.201**	0.196**	0.176**	0.191**	0.075	0.337**	0.297**	0.290**	0.257**	0.153**	0.193**
I5	0.127*	0.225**	0.255**	0.188**	0.176**	0.196**	0.208**	0.204**	0.265**	0.274**	0.293**	0.274**	0.243**
I6	0.209**	0.329**	0.313**	0.195**	0.279**	0.253**	0.126*	0.208**	0.176**	0.251**	0.228**	0.244**	0.164**
I7	0.334**	0.384**	0.262**	0.212**	0.224**	0.269**	0.199**	0.321**	0.268**	0.269**	0.274**	0.219**	0.233**
I8	0.283**	0.304**	0.300**	0.195**	0.250**	0.217**	0.163**	0.243**	0.316**	0.339**	0.330**	0.278**	0.253**
I9	0.326**	0.410**	0.308**	0.258**	0.230**	0.233**	0.201**	0.433**	0.303**	0.300**	0.330**	0.286**	0.289**
I10	0.283**	0.391**	0.326**	0.242**	0.247**	0.279**	0.233**	0.263**	0.207**	0.243**	0.213**	0.282**	0.292**
I11	0.287**	0.368**	0.374**	0.166**	0.326**	0.302**	0.232**	0.251**	0.226**	0.236**	0.271**	0.259**	0.284**
I12	0.282**	0.366**	0.295**	0.145**	0.257**	0.238**	0.155**	0.263**	0.213**	0.245**	0.288**	0.232**	0.208**
I13	0.289**	0.405**	0.388**	0.223**	0.375**	0.368**	0.306**	0.317**	0.241**	0.239**	0.249**	0.272**	0.148**
I14	0.369**	0.411**	0.444**	0.253**	0.344**	0.396**	0.347**	0.333**	0.205**	0.211**	0.203**	0.323**	0.258**
I15	0.335**	0.469**	0.370**	0.236**	0.346**	0.331**	0.252**	0.316**	0.188**	0.274**	0.246**	0.359**	0.270**
I16	0.348**	0.501**	0.403**	0.306**	0.328**	0.389**	0.319**	0.353**	0.203**	0.269**	0.221**	0.315**	0.299**
I17	0.331**	0.457**	0.348**	0.198**	0.287**	0.276**	0.270**	0.406**	0.297**	0.311**	0.373**	0.331**	0.309**
I18	0.207**	0.252**	0.310**	0.216**	0.220**	0.245**	0.184**	0.273**	0.386**	0.334**	0.424**	0.278**	0.245**
I19	0.250**	0.343**	0.428**	0.164**	0.345**	0.330**	0.269**	0.304**	0.230**	0.306**	0.355**	0.398**	0.313**
I20	0.361**	0.364**	0.473**	0.224**	0.345**	0.434**	0.368**	0.385**	0.327**	0.356**	0.309**	0.348**	0.332**
I21	0.331**	0.419**	0.330**	0.217**	0.287**	0.268**	0.288**	0.492**	0.461**	0.449**	0.469**	0.358**	0.344**
I22	0.221**	0.282**	0.299**	0.167**	0.275**	0.267**	0.240**	0.255**	0.249**	0.295**	0.290**	0.302**	0.256**
I23	0.216**	0.282**	0.255**	0.174**	0.301**	0.338**	0.202**	0.233**	0.129**	0.229**	0.167**	0.220**	0.174**
I24	0.272**	0.458**	0.296**	0.203**	0.291**	0.259**	0.176**	0.456**	0.321**	0.355**	0.328**	0.260**	0.277**
I25	0.287**	0.421**	0.362**	0.256**	0.297**	0.291**	0.222**	0.501**	0.420**	0.381**	0.462**	0.354**	0.374**
I26	0.272**	0.372**	0.407**	0.149**	0.314**	0.337**	0.282**	0.481**	0.350**	0.371**	0.422**	0.322**	0.332**
I27	0.269**	0.370**	0.420**	0.237**	0.352**	0.403**	0.264**	0.421**	0.259**	0.299**	0.307**	0.359**	0.267**
I28	0.219**	0.367**	0.386**	0.229**	0.324**	0.314**	0.218**	0.410**	0.331**	0.294**	0.373**	0.341**	0.334**
I29	0.290**	0.403**	0.412**	0.258**	0.293**	0.326**	0.310**	0.290**	0.201**	0.267**	0.269**	0.297**	0.269**
I30	0.277**	0.400**	0.393**	0.178**	0.303**	0.399**	0.286**	0.311**	0.248**	0.291**	0.344**	0.289**	0.300**

\*\* Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

Correlations	I40	I41	I42	I43	I44	I45	I46	I47	I48	I49	I50	I51	I52
I31	0.307**	0.423**	0.366**	0.180**	0.313**	0.351**	0.280**	0.308**	0.317**	0.410**	0.356**	0.344**	0.231**
I32	0.258**	0.491**	0.376**	0.183**	0.303**	0.303**	0.226**	0.395**	0.316**	0.347**	0.466**	0.377**	0.388**
I33	0.272**	0.481**	0.373**	0.174**	0.287**	0.344**	0.236**	0.389**	0.271**	0.303**	0.299**	0.379**	0.362**
I34	0.244**	0.372**	0.347**	0.166**	0.283**	0.321**	0.261**	0.416**	0.275**	0.308**	0.368**	0.288**	0.284**
I35	0.331**	0.560**	0.414**	0.253**	0.267**	0.310**	0.259**	0.501**	0.309**	0.316**	0.366**	0.304**	0.315**
I36	0.326**	0.464**	0.407**	0.282**	0.295**	0.353**	0.334**	0.425**	0.264**	0.287**	0.325**	0.387**	0.370**
I37	0.334**	0.473**	0.431**	0.228**	0.281**	0.329**	0.238**	0.464**	0.372**	0.381**	0.404**	0.327**	0.318**
I38	0.388**	0.274**	0.426**	0.248**	0.349**	0.382**	0.263**	0.350**	0.369**	0.282**	0.368**	0.344**	0.340**
I39	0.446**	0.397**	0.444**	0.334**	0.380**	0.437**	0.395**	0.364**	0.220**	0.308**	0.277**	0.363**	0.294**
I40	1.000	0.420**	0.381**	0.435**	0.330**	0.376**	0.354**	0.399**	0.213**	0.270**	0.248**	0.245**	0.279**
I41	0.420**	1.000	0.413**	0.321**	0.263**	0.309**	0.320**	0.464**	0.208**	0.263**	0.299**	0.267**	0.304**
I42	0.381**	0.413**	1.000	0.445**	0.529**	0.513**	0.418**	0.399**	0.358**	0.342**	0.374**	0.333**	0.377**
I43	0.435**	0.321**	0.445**	1.000	0.486**	0.384**	0.330**	0.392**	0.229**	0.217**	0.220**	0.221**	0.224**
I44	0.330**	0.263**	0.529**	0.486**	1.000	0.552**	0.322**	0.379**	0.297**	0.280**	0.329**	0.343**	0.316**
I45	0.376**	0.309**	0.513**	0.384**	0.552**	1.000	0.566**	0.456**	0.263**	0.260**	0.263**	0.327**	0.371**
I46	0.354**	0.320**	0.418**	0.330**	0.322**	0.566**	1.000	0.498**	0.263**	0.250**	0.251**	0.363**	0.260**
I47	0.399**	0.464**	0.399**	0.392**	0.379**	0.456**	0.498**	1.000	0.363**	0.320**	0.358**	0.308**	0.366**
I48	0.213**	0.208**	0.358**	0.229**	0.297**	0.263**	0.263**	0.363**	1.000	0.556**	0.676**	0.330**	0.360**
I49	0.270**	0.263**	0.342**	0.217**	0.280**	0.260**	0.250**	0.320**	0.556**	1.000	0.561**	0.599**	0.461**
I50	0.248**	0.299**	0.374**	0.220**	0.329**	0.263**	0.251**	0.358**	0.676**	0.561**	1.000	0.507**	0.515**
I51	0.245**	0.267**	0.333**	0.221**	0.343**	0.327**	0.363**	0.308**	0.330**	0.599**	0.507**	1.000	0.520**
I52	0.279**	0.304**	0.377**	0.224**	0.316**	0.371**	0.260**	0.366**	0.360**	0.461**	0.515**	0.520**	1.000

\*\* Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation

\* Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlation

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,941
Bartlett's Test of Sphericity	Approx. Chi-Square	11046,506
	df	1326
	Sig.	0