

A comparison of competitive sport systems

by Helmut Digel

A notable characteristic of modern high-performance sport is its steadily increasing complexity. As high-performance sport becomes more intricate, it also becomes more difficult to control. The author identifies observations that lead to the preliminary conclusion that the future of high-performance sport is more uncertain than ever before. To address the need for comprehensive assessment and comparison of high-performance sport systems, a research project is presented that is simple and, at the same time, quite obvious. The purpose of this investigation is to undertake an analysis of the conditions under which high-performance sports operate in eight nations in order to develop a resource model for successful top-level sport. The author analyses structures of top-level sport in Australia, China, Germany, France, Great Britain, Italy, Russia and the United States of America and identifies the various resources that are available for the structures of top-level sport and an attempt to understand the ways in which these resources interact to yield unique manifestations of high-performance sport systems from one country to the next. And, in cases where certain resources do not exist, the compensatory mechanisms that guarantee successful outcomes are examined.

ABSTRACT

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1. Introduction

Modern high performance sport is characterized by a variety of interests with an obvious dominance of economic pursuit. In earlier times athletes participated for the sake of personal acknowledgement, self-realization and personal affirmation. Today, this traditional philosophy has been largely eclipsed by the economic profit to be gained at top competi-

tions. While a few athletes remain genuinely committed to the traditional ideal, most seem to present it as an ideological function in order to conceal the profit motive. Indeed, high performance sport in modern society has come to be governed by an input-output calculation that is carefully prepared and organized by experts. It is part of a global communication system. It is part of an economy in the process of globalization. And its success is dependent on financial streams that work both to support it and, in some cases, to jeopardize it.

A notable characteristic of modern high-performance sport is its steadily increasing complexity. As high-performance sport becomes more intricate, it also becomes more difficult to control. It is not surprising, then, that the power brokers themselves are in flux. There are ups and downs, winners and losers - both in terms of sports and in terms of the economic mechanisms that fuel all of the support systems. Sports that were popular in the past lose their attractiveness, while other sports are successful in modernizing themselves. New sports are invented. Some of the traditional European sports, for example, are being tested as sports from other continents push their way in. Venues that were once famous strongholds for the organization of certain high-

performance sporting events lose their quality and pale into insignificance. Traditional regions can become athletic wastelands. And formerly leading sports nations suddenly find themselves on the lower end of international rankings. All of these observations lead to the preliminary conclusion that the future of high-performance sport is more uncertain than ever before.

Optimal future solutions are, therefore, urgently necessary and throughout the world the search for them began some time ago. Entire sport systems are being put into question, while others are being created on the drawing board or composed on the computer.

Notwithstanding all of the above, high-performance sport remains a growth sector of the first order. This means that the laws that govern the global economy apply to high-performance sport just as they would to any other sector. In this context, high-performance sport has become an increasingly significant component of state policy (summarized in Table 1). In *Great Britain* the Blair government tries to make everything better than the previous conservative governments. Completely new sport institutions are being established on the basis of a new sport legislature. In *Australia* the Olympic

COUNTRY	STATE POLICY
Australia	Olympics used as opportunity to improve sport structures
China	Communist party dictates sport policy. Some opportunities for sponsorship from multi-national corporations.
Germany	Recent budget cuts and re-evaluation of the entire sport system
France	'Central Control' concept seems to be working well
UK	New sports legislature and new institutions proposed by the Blair government
Italy	CONI beginning to be questioned regarding its policy and its qualification as the controlling institution
Russia	Undergoing radical transformation of sport system to fit new political order
USA	Traditional power of the NOC currently being questioned

Table 1: The general nature of state policy with respect to high-performance sport: a comparison of eight countries.

games presented the opportunity to modernize obsolete sports structures. In *Italy* the financially strong national sport system, which is molded by CONI - a central organization - is put into question both in terms of policy and qualification. In the *Federal Republic of Germany* the system of competitive sport is being examined. It was forced to present a plan for top-level sport for the year 2000 and after cuts in budgetary funds it is being evaluated, once again. In *Russia* a radical change can be felt everywhere. A once closed society geared towards high-performance sport is in the process of transformation. Obviously the question as to the adequate forms of the sport system cannot yet be answered.

At first glance, *France* seems to be a source of tranquility. This sport system has a 'central control' concept based on the ideas that, especially in the former 'eastern bloc' countries of Europe, shaped a successful high-performance sport for many years. However, even in France the search for new sport structures seems to be under way. Meanwhile, the contents and priorities of sport policy in *China* are still defined by the communist party. The opening of the Chinese economy has consequently initiated a parallel development in the area of sports. The presence of willing sponsors offers new financial possibilities for sport associations. Competition arises among the different sports to attract this funding and more efficient personal structures are being sought. In the *USA* an intensive internal debate began quite some time ago regarding whether it is appropriate to leave all power to the National Olympic Committee.

The evolution of sport systems is not only driven by the fact that there are few winners and many losers in the competition between sports and that, likewise, nations can be observed to be either on the way up or experiencing a marked decline. There is more to it than that. This evolution - the new thinking, the strive for a change, the search for new and efficient structures - is, in fact, more likely the result of an increasing dependency of the system of high-performance sport on its environment. There are more and more

partial systems that play an increasingly significant role in the development of high-performance sport.

Modern high-performance sport, for example, is no longer conceivable without the mass medium of *television*. This medium itself, together with the internet, is in a process of transformation whose orientation is unidentifiable for a lot of people. However, high-performance sport is also unthinkable without sponsors and the dependency on and cooperation with the economy. The fundamental necessity of mixed financing of maximum sport performances requires a new methodological strategy for decision and action.

High-performance sport is also dependent on its own internal machinery for the production of sport performances. It can only be maintained as long as young talent continually finds its way to the top echelons of sport. This self-perpetuating process is the only way to assure the entertainment industry that the product called "high-performance sport" can be reliably available to market. The question regarding the development of young talent is therefore of existential importance for all systems of high-performance sport. But there are hardly any satisfying answers to this question, either. In many countries the *educational system*, which high-performance sport is forced to cooperate with if it wants to be successful, seems to be more and more unwilling to work together with systems geared toward elite performance.

Against this background the question arises regarding the basis upon which persons responsible for the system of high-performance sport must act. What knowledge base can they rely on for decision-making? How sound can their decisions actually be, given the vacuum of knowledge about the structures of other high-performance sport systems? Is it even possible to take over responsibility for high-performance sport with clarity of vision as to how to proceed?

Exacerbating the leadership problem is the fact that, in almost all high-performance sport systems worldwide, responsibility is divided between volunteer and full-

time officials and, almost everywhere, it is the volunteer officials who retain prime responsibility for this system. Anyone who inspects national systems of high-performance sport can readily observe that volunteer leaders are often not very competent or knowledgeable and that they tend to be dominated by interests that are not always in accordance with advanced sport outcomes. Even fully paid, 'professional' leaders do not always have the desired knowledge and capabilities.

It is surprising, for example, how few of those responsible in the different disciplines of high-performance sport know anything of substance about their competitors. The knowledge deficits observed at the national level are even more pronounced at the international level. If one asks the leadership of even the most successful Olympic nations about their knowledge and experiences with respect to their competitors, general ignorance is the predominating characteristic. The persons responsible for British sport do not know very much about the structure of Italian sport, those responsible for Italian sport know hardly anything about French sport, and the custodians of French sport are in ignorance about the sport systems of their competitors in Germany or Russia.

Given the immense complexity of both national and international sport systems, it will probably take quite a long period of time to overcome the lack of knowledge and competence that prevails in the upper ranks of sport leadership. Many sport associations within these systems tend to be deeply rooted in traditional patterns of action and seldom are they willing to have their work in high-performance sport evaluated.

Notwithstanding all of the above, it is obvious that success in high-performance sport is not caused by accidental structures. Indeed, high-performance sport is a technological enterprise that can be controlled rather exactly just like any other industrial product. And like any other product it must prove itself on the market. Furthermore, the hard indicators that must be considered

when analyzing product success are sufficiently known. As far back as the seventies and eighties studies by NOVIKOV/MAKSIMENKO (1972), SEPPÄNEN (1972), COLWELL (1982), HEINILÄ (1982) and others identified important empirical variables that defined high-performance sport as a calculation in terms of economy and employment policy within a complex organization. In other words, all of the components required to adequately structure and analyze sport as a *competing product* within the global economy are ultimately identifiable and knowable. It is really up to the custodians of high-performance sport to put in the effort to grasp a higher order of understanding regarding the product that they are entrusted to develop and promote.

2. Goals of the research project

To address the need for comprehensive assessment and comparison of high-performance sport systems, a research project is presented below that is simple and, at the same time, quite obvious. It is based on the premise that if individual people, groups, enterprises, organizations or even societies are in a situation of rivalry, two competing parties can be distinguished. In a situation of opposition each side strives to decide the competition in its own favor. In order to reach this goal one tries to be better than the others. In this situation it is advantageous to know exactly who the other side is, what it is capable of and which strategy it uses in the effort to win the competition. In brief, one must thoroughly understand the opponent's system.

There would appear to be, therefore, an obvious need for an investigation in the area of sport sociology aimed at elucidating the special features of the different systems of high-performance sport. The current investigation is a response to this need and is guided by the following question: *What are the common characteristics and differences of the structures of high-performance sport in eight selected countries?* The general approach to the problem involves the identification of the various resources that are available for the structures of top-level

sport and an attempt to understand the ways in which these resources interact to yield unique manifestations of high-performance sport systems from one country to the next. And, in cases where certain resources do not exist, the *compensatory mechanisms* that guarantee successful outcomes are examined.

In short, the purpose of this investigation is to undertake an analysis of the conditions under which high-performance sports operate in eight nations in order to develop a *resource model for successful top-level sport*. It is important to point out that, in this initial inspection of the problem, the focus is limited to common structural characteristics and differences, or 'functional equivalents', of factors that affect a given sport system as a whole. Factors influencing the relative progress or viability of specific sports within each system will not be dealt with.

3. Theoretical basis

Any attempt to analyze entire sport systems not only requires systematic appraisal

of the eight nations and their sport systems, along with their specific features in single case studies, but it also requires the comparison of single case studies with one another. But both - single case study and systematic comparison - require, in advance, the development of a *success-resource model* taking into account the necessary and adequate conditions of successful action in high-performance sport. If one considers the preliminary reflections presented and the central question of the project, there are three resources levels, in particular, that deserve to be dealt with in more detail. They can be identified at the level of the society, at the level of the sport organization and at the level of the relationship between the high-performance sport system and its environment.

On the first level of the heuristic method proposed here, the level of the society, the question should focus among other things on the respective structure of the population, the degree of differentiation and modernization, the value structure, the significance and



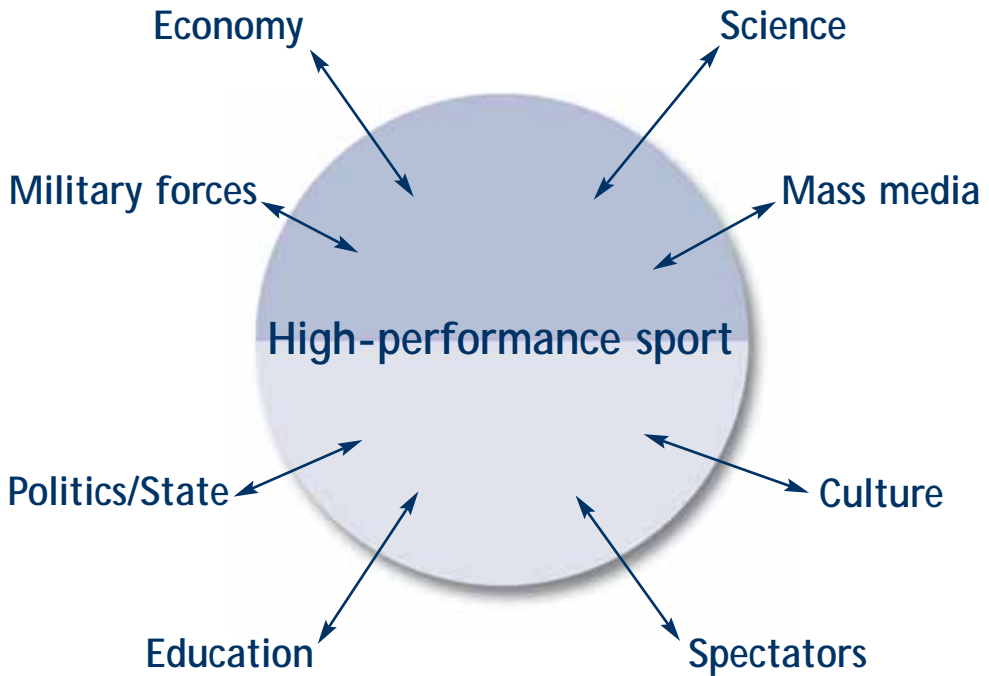
role of leisure and sport, the status of high-performance sport and high-performance athletes as well as the inclusion and exclusion mechanisms and, thus, on dimensions of social inequality. This first level should be conceptualized as a background variable as it were because it can be assumed that the framework conditions, which are different in each country, exert an independent influence on the two other levels.

In the area of the organization of high-performance sport – the second level – numerous individual categories, which are important for successful actions in international competitions, must be distinguished. By way of examples, the following categories are mentioned: ideological preconditions, setting of priorities, Olympic tradition, structure of the athletes, staff structure, structure of sport facilities, financial structure, structure of talent search and promotion, structure of

the competition system, structure of training, organizational structure, structure of the reward systems, structure of the anti-doping fight, planned goals and current trends.

Finally, the sport system itself is shaped in a variety of ways through interdependent relations with the environment. The political system or the respective national state, economy, the spectators, the system of the mass media, the educational system, science as well as the armed forces seem to be of special significance for the qualitative and quantitative development of the sport system. The analysis of the interactions between system and environment shall reveal typical forms of the network and mutual benefiting, transaction costs occurring in the process as well as systematic influences of the relevant environmental actors on the structural conditions of high-performance sport.





If one combines the decisive resources of top-level sport which have a direct or an indirect influence on success and which have been identified on the three levels, it can be assumed that, according to the type of sport considered and the respective nation involved, there will be different models or resource patterns. The task will be to outline these models and patterns in a comparative way and to interpret them in order to be able, possibly, to offer the advice desired on the basis of the knowledge acquired in the process.

4. Methodological basis

The project dealing with the topic "Organization of high-performance sport – a comparison of the most successful sport nations at the Olympic Summer Games in Atlanta 1996" is supported by the Federal Institute of Sport Science (BISp). It deals with the structures of top-level sport in Australia, China, Germany, France, Great Britain, Italy, Russia and the United States of America. These structures are examined, compared and, finally, classified into types using written or oral inquiries as well as literature and document analyses. Special focus is on athletics,

swimming and volleyball, the national associations governing these sports as well as the National Olympic Committees and the national ministries responsible for competitive sport. As the research project will be terminated in the year 2001 only preliminary results can be presented at this time.

5. Selected results

5.1 Social framework conditions

If one wants to examine the special features of national systems of top-level sport, they must be interpreted mainly as far as their relation to society is concerned. Some of the sport systems to be compared are integrated in societies that are very different at least to some extent. For example, there is a considerable difference between the value structures of the USA and of China. It is certain that the population structures (demographics) in Russia and Italy are highly different with respect to age and family structures. On the one hand, there are rather open societies, in which vertical mobility is not hindered by barriers or mechanisms of exclusion. On the other hand, there are rather

closed and immobile societies, in which only certain groups find access to certain positions. In Germany the employment situation is becoming precarious for a steadily increasing part of the population, whereas in China, for example, there is full employment according to official reports. Nations with elaborate systems of social security, such as which are typical of welfare states, are opposed by nations with almost neoliberalistic concepts of economy. While the ethnic populations in

France and Great Britain favor the recruitment of athletes, new immigration laws are discussed in Germany and Australia. These are only a few examples that illustrate why it is so important to pay particular attention to the social level in the context of this project.

5.2 The system of high-performance sport

When the eight systems of high-performance sport are characterized and compared,

FACTOR	SPORT SYSTEMS COMPARED
Ideological Preconditions	In the USA the athlete is seen to control his/her own destiny; In all other countries it is the state that is seen to control outcomes
Setting of Priorities	All 8 nations strongly promote Olympic sports
Olympic Tradition	All 8 nations have a strong tradition of participation
Organization of the Athletes	Hierarchical structure in all 8 nations
Staff Structure	Tendency toward professionalism in all 8 nations
Management of Sport Facilities	In all 8 countries, high-performance facilities tend to be specialized and centralized
Financial Structures	Mixed-finance income structure in all 8 countries
Methods of Talent Identification and Sport Promotion	All 8 nations try to identify talent
Structure of the Competition System	Extensive regional and national competition programs exist in all 8 countries
Structure of the Training Environment	All 8 nations operate using centralized control
Organizational Structure	BL in the German Sports Confederation. CONI in Italy. NOC controls Olympic selection in the USA, but it is not controlled by the government.
Reward Systems	Australia has specific rewards for coaches
Anti-doping Controls	State laws dictate this in Australia and Great Britain, while in Germany and Italy state laws regarding doping are not wanted
Planned Goals	China, Great Britain and USA all aim for gold medal performances, while the German sport authorities place value on top-3 finish
Current Trends	All systems are in a state of flux. Every system seeks greater efficiency and there is a close examination of existing resources
Support Systems	Year-round (e.g. medical support) – located at the high-performance centers
Athlete Privileges	Privileged access to high-performance training centers

Table 2: Systems of top-level sport as they compare from one country to the next.

their differences and similarities become obvious (Table 2). All nations have a long Olympic tradition with an intensive participation in the last Olympic games. In all nations priority is on the promotion of the Olympic sports that are controlled on the basis of ideological concepts. "To be the best in the world" is the sole goal of both Great Britain and the USA. China, too, strives for first place. Reaching a place amongst the top three is the goal of the Federal Republic of Germany.

In all nations one works with yearly plans and special programs. The athletes are divided into hierarchical squads and, increasingly, they are accompanied by professionally-orientated service staff. Their performances are motivated through a complex system of rewards among other things. In all systems central control of training seems to be a fundamental condition of international success. Training also implies a physiotherapeutic and sports-medical accompaniment throughout the year. To provide this service all systems need steadily increasing financial funds that can only be guaranteed through a mixed-financed income structure. In all nations the athletes are provided special sports facilities for training and competition. In public sports facilities high-performance athletes usually have a privileged right of use.

The problem of talent search and promotion is identical in all eight nations and everywhere efforts are undertaken to offer the athletes favorable framework conditions for international comparisons through an extensive system of national competitions that take place throughout the year. Finally, more or less ambitious structures for the fight against doping can also be found in all eight nations.

However, these common aspects cannot conceal the considerable differences that can be observed from one country to the next in certain categories. For example, there is a department for competitive sport (BL) in the German Sports Confederation (DSB), which controls German high-performance sport. A comparable instance of control cannot be found in any of the other national systems. In Italy there is CONI with about 1,200 full-time employees who are

responsible for controlling the Italian high-performance sport. In the USA the NOC is the sole controller of Olympic high-performance sport, but it is not influenced by the state. In the same country there is the most marked co-determination by the athletes based on state laws, whereas in other countries the athletes are primarily *recipients of orders*.

With respect to reward systems, there are considerable variations from country to country and the coaches are involved in these systems only in a few countries; as they are, for example, in Australia. In some countries the athletes have considerable privileges in schools, jobs and universities, whereas in other countries these privileges are controversial or do not exist at all. In Australia and France the fight against doping is done on the basis of a special state law, whereas in some countries - in Italy, for example - such laws are being planned. And in Germany they are not wanted. The numbers of controls in training and competition vary considerably from country to country and not everywhere the sanctions are executed with the necessary determination.

The list of differences could be even longer than that described so far. At its end there should be the observation that all eight systems of high-performance sport are feeling the pressure for modernization. All interviews in the eight nations led to the unanimous statement that currently almost everything is being put to the test. The need for an increase in efficiency is common talk, the existing resources are being examined and everywhere functional equivalents are being sought.

5.3 Selected relations between sport system and environment

(Items in this section are summarized in Table 3)

The role of state and politics

In general, it can be said that high-performance sport needs the support of the state if it wants to be successful. The state can influence, account for or control high-performance sport in a great variety of ways. The comparative examination shows: (a) that in all countries, with the exception

of the USA, high-performance sport is financially supported in a direct manner through the use of government tax money; (b) that it is politically controlled to a considerable extent; and (c) that sport itself obtains some privileges through the state which are not available to other sectors of the society.

The most marked political control can still be found in China, although a relaxation has been observed within the past decade. The general administration of sport can be compared to a government department. The director is simultaneously the President of the NOC of China and the vice prime minister is the highest representative of sport. In

Russia, Australia and France there is also a marked influence of the state on sport. In Russia, however, all sport associations and the NOC were declared independent by a decree of president Yeltsin in 1991. In 1999 a new sports law was added confirming that the possibilities of influence through the state should be restricted to financial grants only. In practice, though, state control is not dependent on laws or a long-term concept. It is, rather, determined by the respective political personalities to a considerable extent. The control by the state is therefore difficult to assess from an external point of view. In France there has been a special legislature for high-performance sport since

FACTOR	AUS	CHINA	GER	FRA	UK	ITALY	RUS	USA
Role of the State & Politics	High	*High*	M-High	High	Med	Low	High	*Low*
Role of the Economy	High	Low	M-Low	Med	High	Med	Low	*High*
Role of the Mass Media	M-High	Med	M-High	High	M-High	*High* [Especially in newspaper circulation]	Med	High
Role of Education	High [School & Univ. Systems]	High [Sports Schools]	M-High [Clubs & Sport Schools]	M-High [Clubs & Sport Schools]	Low [Clubs]	Low [Clubs]	High [Sport Schools]	High [School & Univ. System]
Role of Science	High [AIS]	M-High [Special Sports Research Institutes (5-7 of them) + Univ. Research Institutes(2)]	High [BISp, IAT and FES]	M-High [INSEP]	Low [National Sports Research Institute being built in Sheffield]	Low [Istituto Science dello Sport]	High [Rich tradition of Sport Science Academies]	M-High [General Univ. Studies]
Role of the Armed Forces	None		High	High [Esp. for Winter Sports]	None	High [Some Sports]	High	None

Ratings Legend: *High* = Highest; High; Med = Medium; M-High = Moderately High; M-Low = Moderately Low; Low; *Low* = Lowest

Table 3: Socio-political factors that have an impact on high-performance sport: a comparison of eight countries [Australia = AUS; China; Germany = GER; France = FRA; Great Britain = UK; Italy; Russia = RUS; and United States of America = USA].

1984 and the Ministry for Youths and Sport exerts direct influence on the development of top-level sport. In Great Britain and Germany the state holds a medium position. In Italy and the USA the influence of the state is the least pronounced. In the USA, however, the specific conditions for the development of the sport system were defined by the Amateur Sports Act of 1978. Tax relief for sport has been possible by law since 1950. In Italy the state merely has the function of supervisor; it is only responsible for school and college sport. However, the state can influence high-performance sport directly through military sport. This is especially due to Andreotti, who in 1948, as state secretary, enforced a law for the financing of sport. This way the Italian lottery system (*Totocalcio, Totogol, Totosei*) became the basis of Italian top-level sport and CONI was declared the association of associations.

The role of the economy

The role of the economy for the development of high-performance sport is extremely different in the eight nations examined. It is noticeable that economy itself, with its industrial enterprises, always plays an indirect role with respect to high-performance sport. Only in a few exceptional cases is the economy the producer of maximal sport performances. Although industrial sport communities and teams of different economic enterprises can be found in the individual nations, the economic system mostly confines itself to the activity of sponsoring. This way the economy is the co-financier of the system of high-performance sport. Moreover, in some countries (above all, in the USA) patronage activities can be observed. The biggest influence on the financing of the sport system is exerted by the American economy through comprehensive sponsoring and donation activities. Sport sponsoring and patronage activities are the least pronounced in China and Russia. In Australia and Great Britain, marked structures of sport sponsoring can be observed, too. The activities are somewhat weaker in France and Italy. In Germany, sport sponsoring can still be regarded as subordinate to the support through the state. In China the sponsors par-

ticipating in the support of high-performance sport almost exclusively come from the USA: *General Motors, General Electric, Boeing, Delta Airlines*. In Russia, sport sponsoring is only successful at the highest level and even there high-performance sport is primarily supported by foreign firms – such as *Reebok, Adidas, CocaCola, MTV-Inform* (media) and *Red October* (equipment). At the regional level state enterprises are still the most significant supporters of the local athletes and competitions, the support being in most cases of a non-monetary type.

The role of the mass media

In all eight nations the mass media are the most important reinforcers for the development of the system of high-performance sport. In all nations the sport press plays an outstanding role in sport journalism. The same applies to sport television in the programs of the various television stations. Sport television itself is an important instrument for re-financing the system of high-performance sport, in that TV coverage increases the attractiveness of high-performance sport for sponsors.

A pronounced sport reporting with a special tradition can be found in Italy. Three daily sport papers, two special sport channels (*Streamsport and RAI Sport Sat*) and the statistics of the sport journalist profession prove this special position. In Italy the *Gazetto dello Sport* reaches a circulation of 3.2 million copies. If this is compared with the most sold daily newspaper, the *Corriera della Serra*, which can only reach 2.7 million copies, the special role of sport in the daily newspapers of Italy becomes obvious. In France and in the USA, too, sport holds a special position in the mass media. In the USA there are several special sport transmitters and, furthermore, some channels focus exclusively on one sport. *Sports Illustrated* is the magazine that reaches the highest circulation worldwide. In Australia, Great Britain and Germany there are similar structures of mass media with respect to sport, whereas Russia and China are still in the build-up phase. By now special sport channels can be found in the TV options in all eight nations and, everywhere, sport televi-

sion is dominated by the dictate of audience participation. In all countries the internet, too, is in the process of becoming the new market place of high-performance sport. It must be said, however, that in all eight nations the possibility to secure important finances by selling television rights can be consistently counted upon for only a few key sports. In Russia, for example, this concerns only the most popular sports like soccer and ice hockey, whereas all other sport associations must actually pay for television broadcasts in order to make their sport attractive to sponsors.

The role of education

In all eight nations, the public school system is the supporting base for the development of high-performance sport. However, depending on the historical development, there are additional institutions that form the foundation of high-performance sport in cooperation with the school system. This particularly applies to the club system in Germany. Comparable basic structures can be found in France, Italy and Great Britain.

In all nations examined, the school and university systems support the system of high-performance sport by offering a competition program of their own. These competition programs are sources for the recruiting of athletes and staff and, to some extent, they also form the bridge to the system of science. Apart from the public schools the universities are of particular significance. However, this primarily applies to the Anglo-Saxon university system and, in particular, to the USA. In this particular system, *intramural sports*, *extramural sports*, *interscholastic sport* and *intercollegiate sport* play a central role when estimating the contribution of the educational system for high-performance sport. The *National Collegiate Athletic Association* (NCAA) allows grants to be awarded to outstanding athletes who must achieve at least a 3,0 grade point average in university or college. This scholarship system is one of the central foundations of high-performance sport in America.

So-called 'sport schools' are also important. They can be found in Russia, China, France and Germany. By now there are seven performance systems with special schools for

competitive sport within the public school system. Here the sport schools for children and youths of the former GDR or comparable schools of the former Soviet Union serve as orientation points. In Russia sport schools are the central foundation of the system of high-performance sport. The number of these sport schools exceeds the number of sport schools in France and China many times over. Only in China a comparable number of sport schools can be found. Altogether there are 3,000 sport schools in Russia, 2,113 children's and youths' sport clubs, 860 children's and youths' sport schools of the Olympic Reserve, 73 youths' sport schools for athletes of greater ability and 30 colleges of the Olympic Reserve. About 80% of the Olympic athletes in the individual sports have a degree from one of the colleges of the Olympic Reserve. Despite the economic difficulties in Russia it can be assumed that, due to the functioning system of sport schools, Russia will continue to play a dominant role in international competitions.

The role of science

The systems of high-performance sport in the eight nations being compared are all scientifically supported systems. In all nations there are special research institutes and scientific advisory services for the optimal care of the athletes and coaches during training and competition. In all nations there are central research institutes, which, however, are very different from one another with respect to their scientific orientation and size of staff. In the Federal Republic of Germany, the Federal Institute of Sport Science (BISp), the Institute for Applied Training Science (IAT) and the Center for Research and Development of Sport Equipment (FES) hold a special position. INSEP in France and the AIS in Australia are central service institutions for squad athletes with a focus on sports medicine and training science.

Within the educational system of France, INSEP is also the central institution responsible for high-performance sport. At the French universities sport science does not hold a strong position and deals with the research in the area of high-performance sport only marginally.

Furthermore, the universities participate in the general research in the area of high-performance sport in all eight nations. The role of science is particularly pronounced in Russia, Australia and Germany. Russian sport science plays a unique role worldwide. At the top there are the sport science academies of St. Petersburg and Moscow. In China there are five special research institutes and two research institutes at the university level which share research work in the area of high-performance sport.

In the USA the system of high-performance sport only uses the various research structures at the universities. Special sport-science institutes are not important there. In Italy and Great Britain the advisory performances by sport science can be rather called subordinate. In Great Britain, currently, a central national research institute is being established in Sheffield. In Italy there is only one research institute dealing with questions of high-performance sport. In the *Institutio Science dello Sport* in Rome research is primarily done in the area of sport medicine and training science. Moreover, at present, attempts are being made to build up a comprehensive advisory system in co-operation with the universities.

In general, one can see that only a few disciplines of sport science with their advisory

performances are accepted by the system of high-performance sport. Sport medicine, performance diagnosis, biomechanics and especially physiotherapy play an outstanding role. Research in the area of sport psychology is accepted only in the USA and advisory services in the area of sport sociology are almost unknown.

The role of the armed forces

The role of the armed forces in the development of high-performance sport can be judged as "of the highest importance" in some countries and as "of no importance at all" in other countries. It is noticeable that, particularly in the Anglo-Saxon competitive sport nations, the armed forces and the police play almost no role at all. In the Federal Republic of Germany and in Russia, on the other hand, the armed forces are of great significance. These countries have special institutions and a national system of high-performance sport within the armed forces. The sport companies of the federal armed forces and their high-performance athletes are provided with ideal training and competition conditions. The same applies to France, particularly as far as winter sports are concerned. In Italy, the armed forces, the customs system and the police play a central role in the promotion of some sports. ■

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