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The Development of Sports Documentation and Information Centers Highlights from Recent History

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1. Introduction

Information services provided by sports documentation and information centers parallel technological enhancements available to the business world, education and libraries. Visionaries and innovators in the 1960s and 1970s saw that the sports researcher could benefit from these improvements through the application of these new technologies.

As sport participation and competition gained momentum in the 1960s and 1970s, the need for educated coaches and physical educators, better training methods, improved results at international competitions partly drove the need for enhanced sports information services.

This paper will take a look at the developments in the major geographic areas of the world, briefly looking at the historical developments in sports information services with a survey of the new technological initiatives and important cooperative projects are underway.

2. Early development of sport documentation centers and sport libraries

The first sport documentation centers were founded on the personal collections of prominent persons in physical education where physical educators were trained. Europe sees the beginnings of these small libraries in training schools. For example, the son of Per Henrick Ling, the originator of Swedish gymnastics system and founder of the "Kungl. Gymnastiska Centralinstitutet i Stockholm" (The Royal Gymnastic Central Institute of Stockholm), in 1814, trained a legion of gymnastic instructors. His son, Hjalmar F. Ling, was a main influence on the establishment of the system in Sweden and to the international spread of Ling gymnastics program. His considerable personal library of gymnastic literature, left to the Institute upon his death in 1886 provided the foundation of a "sport documentation center." The establishment of the Idrottshogskolan (University College of Physical Education, Stockholm), in 1813 with its library is another instance of an early college specifically to train physical educators. (Gerber 1971, p.169-173)

In the United States, Springfield College in Springfield, Massachusetts is a good case in point of a specialized college for physical educators and through its library, one of the first sport documentation centers in the US. Established in 1885 as a School for Christian Workers, at the onset, the administration established ties with the YMCA and created a department within the college to train men for administrative and physical education posts within the YMCA. In 1887, Springfield College hired two men who were important to the US physical education movement, Luther Halsey Gulick and Oliver C. Morse. A few years later, James Naismith, a graduate of McGill University in Montreal, continued his studies in at Springfield. He joined the faculty, and in 1891 invented the game of basketball. By the early 1900s the college was called the International YMCA Training School. The first bachelor degrees in physical education were granted in 1906.

The Marsh Library was built in 1913 by a well know library architect of the day until a new library endowed by Paul and Edith Babson was built in 1971. Library collections supported the physical education and other arts and professional programs of this institution and over the years were enhanced by donations from distinguished professors and alumni.

In Japan, Tokyo University of Education (formerly Tokyo Higher Normal School), established a gymnastics training school in 1878 to train physical educators to teach in the elementary schools. The post war period brought physical education teacher training and sport sciences to other Japanese universities, including the University of Tsukuba, Tokyo Metropolitan University, Tokyo Gakugei University and Chukyo University among others.

Finland provides a good example of a European country that established specific programs. It was influenced by the early gymnastics teachings of Ling and Jahn but had its own advocate in Victor Heikel. In 1868 physical education teacher training was established at a private institute. Later this was absorbed in 1882 by Helsinki University where the program was closed in 1974. A re-organization of academic programs in Finland lead to the establishment of the Faculty of Physical Education in 1968 at the University of Jyvaskyla. (Telama 1987)

Germany is also replete with a rich and full history with the establishment of physical education training schools and has a strong tradition of academic excellence, thorough training of physical educators and sport scientists. In 1918 the German College of Physical Education ("Deutsche Hochschule fuer Leibesuebungen" and later the "Reichsakademie fuer Leibesuebungen"), the predecessor to the "Deutsche Sporthochschule" in Cologne was originally established in Berlin. This organization not only is considered the nucleus of sports sciences in Germany, but also took the role of providing the oversight of gymnastics clubs and sports associations. Carl Diem was the guiding light of this institution.

These early beginnings were followed by an explosion of academic programs for physical educators in many countries during the early part of the 20th century. Many state universities in the US saw the establishment of programs, including Teacher's College, Columbia University, University of Nebraska, University of Illinois, and the University of Wisconsin among many others. Similar happenings occurred in Europe during the same period.

In England Carnegie College in 1933 was the first college for training specialist men teachers of physical education. Students were admitted who already had an academic degree and the college provided, in one year, physical education training courses. Integrated BA degrees were offered starting in 1946 at the University of Birmingham, where today the Sports Documentation Centre, Centre for Sports Science and History provides the library support for this program. (Dunetts & Milner 1980).

In the post WWII period many of the current sports sciences and physical education academic programs were established including the University of Otago in New Zealand (1948), and many programs in all countries of the world. Notable also are the German College of Physical Culture in Leipzig (1950) and the "Deutsche Sporthochschule Köln" in 1947, two specialized institutions with excellent libraries. There are many other sport sciences programs in Germany at the "Georg-August-Universitat Gottingen", the "Universitat der Bundeswehr Munchen", "Universitat Bremen", "Universitat Tubingen" to name a few.

3. Technological enhancements that influenced the development of libraries and documentation centers

The expansion in the number of university and college sport sciences and physical education faculties and schools parallels the growing influence of the Olympic Movement and international sport competitions, the developments in sport sciences research with its applications to enhanced coaching and training methods. Nationalism also plays an important part in this recent phenomenon for the politicians and sport administrators in many nations see success in international sport competitions important for the nation's self esteem and world recognition.

Academic libraries that serve faculties or schools of physical education were among the first to embrace automation of book and serial holdings. The first automation in many libraries utilized the IBM mainframe computer 360 that produced catalog cards or a printout, usually by author/title and sometimes, subject, of the library's holdings. This was followed by a library's catalogue in microfiche or, in some systems, with the library's serials list on microfiche.

By the late 1970s libraries were looking at computer systems with more flexibility. This included a database with access points to the central record where many locations and differing call numbers within a departmental library system could be accommodated. With the lead of the Library of Congress to establish data format standards, the automation of library holdings began a pace. As the cost of computing power dropped, storage increased, and appropriate software developed, libraries reconverted records to computer readable format. (Boss 1997, p. 1-2)

The advent of the minicomputer in the late 1970s contributed to the automation of mid-sized libraries. But the most important impact was the microcomputer in 1981 extended the use of the computer to smaller libraries and revolutionized the research process in a multitude of ways. (Boss 1997, p. 2-3).

Many academic libraries, now on their second or third generation computer systems, now have access to library resources with multi-point and convenient access of online public access catalogues (OPAC) and the online periodical article databases mounted inhouse or accessed through ERL servers housed by a remote, but Internet-connected vendor e.g. Silverplatter.

Comparable to these developments in libraries was the automation of periodical indexing by the large indexing services, e.g. MEDLINE, (1966), ERIC (1966) with access to these databases via the printed index initially. One of the first applications was the KWIC index (key word in context) where key words in the title could be combined to find periodical articles of interest to the researcher. Later, this was replaced by more flexible online searching mode, e.g. author, title, subject terms or the searching in other fields such as date or document type. The establishment of Internet protocols in the 1970s allowed a library to access a far flung computer system where the database was mounted, e.g. through a vendor Dialog (formerly Lockheed Information Systems).

4. Current sport documentation centers – The big five

With academic libraries focusing on the online catalogs for information on what books or serials are held, the real gap in sport science research was access to the whole range of the periodical article literature. A few sport periodicals were indexed at the start of the automated major indexing service, e.g. *Journal of Health*, Physical Education and Recreation and Research Quarterly in the Current Index to Journals in Education (ERIC). Some of the sport sciences journals were found in Psychlit, BIOSIS, or Medline. However, the world lacked a good database devoted to sport sciences, leisure, recreation and

physical education. This task saw implementation first for the sport sciences periodical literature by The Federal Institute for Sport Science ("Bundesinstitut for Sportwissenschaften – BisP") with the establishment of SPOLIT in 1972, followed by the SPORT Database in Ottawa in 1974.

4.1. The Federal Institute for Sport Science "Bundesinstitut for Sportwissenschaften (BisP)"

Founded in 1970 as an independent organization of the Federal Ministry of the Interior, this organization's mandate was to be the sports documentation and information center for the Federal Republic of Germany. By 1972, BISp was the most advanced in the sport world, having developed a computerized database called SPOLIT in 1972 containing advanced-level scientific records from sport sciences periodicals mainly in German and English language. To index and abstract these periodical articles, a sport thesaurus was developed (and now has over 10,000 terms.)

Analogous with other database producers the indexed periodical literature was first reported in printed indexing publications. *Sportdokumentation* is published four times a year and *Sportwissenschaftliche Forschungsprojekte*, annually.

When the CD-ROM came into use, BISp marketed SPOLIT in this format through the publisher Czwalina Verlag in Hamburg. This flexible format, which had a great impact on the individual sport researcher's access to databases (rather than the librarian-mediated search service), is now being replaced by the popularity and convenience of web access. SPOLIT with over 130,000 records is now available via the German Institute for Medical Documentation and Information (DIMDI) website, through its grips-Websearch software, *http://www.dimdi.de/engl/dimadren.htm*

4.2. Sport Information Resource Centre (Ottawa)
http://www.sportquest.com/index.html

Efforts to develop a documentation service in Canada date from the early 1950s, when Dr. Doris Plewes maintained a collection at the Fitness and Amateur Sport Directorate (FASD) in Ottawa. Through her efforts and Dr. Stanley Spicer, a consultant with Sport Canada, studies and reports on the feasibility of a documentation service were carried out. A national convention on in the early 1960s held discussions on a possible sport and leisure documentation network.

From 1963 to 1969, the Fitness and Amateur Sport Directorate supported a documentation centre that was housed at the University of Ottawa. In 1969 the University dropped its support and some of the collection was moved back to the Fitness and Amateur Sport offices.

With the opening of the of the Administrative Centre for Sport in 1971 on River Road, space was allocated for a library and the collection moved from the offices of FASD. The periodical collection retrieved from storage. Unfortunately about half of this collection was destroyed by water and mildew.

In 1972-1973, discussions between key Canadian academic and sports figures, centered on the need for a documentation centre and database. Key players included, Douglas Fisher, a journalist and one of the founders of the Coaching Association of Canada (CAC), Geoff Gowan, then Technical Coordinator for CAC, and Roger Jackson, Director of Game Plan 1976 and President of the Canadian Olympic Association. Under their influence, the CAC Board commissioned a study by Martha Stone, the Director of Libraries at Health and Welfare Canada, on the needs for a documentation centre. After her positive report was submitted in February 1973, the CAC Board acted swiftly and hired Gilles Chaisson as Library Manager on August 15th, 1973. (SIRC Annual Report, p. 11)

Beginnings of a SPORT database

The original mandate from the Stone Report stated that an Information Resource Centre should be established to respond to the information needs of the Coaching Association of Canada and to the needs of the outside agencies and organizations requiring information on the art and science of coaching.

The most pressing problem at start up was the outdated collection and to start a documentation service. In Spring of 1974 Gilles Chiasson made an extensive trip to Europe visiting documentation centers in England, the Netherlands, France, Belgium, the Federal Republic of Germany, Switzerland, Austria and Italy. The Federal Institute for Sport Sciences (BisP) was the most advanced having developed a computerized database in 1972 of advanced level scientific records.

From the European visits Gilles Chiasson investigated computer systems and software and submitted his proposal the CAC Board. In 1974, the CAC Board approved the use of the CDS ISIS software available through the International Development Research Centre (IDRC) and usable on computers of Alphatext Ltd. By August 1974, SIRC published the first issue of Sport Articles (later renamed as the *Sport and Recreation Index,* and thirdly published as *Sport Search*). These monthly current awareness tools, arranged by major subject headings, displayed the current indexing of a wide range of physical education, coaching and sport sciences articles. (SIRC Annual Report, p. 12)

Expansion to a more international database

By 1979, SIRC's SPORT Database was mounted on Infomart/SDS, an international vendor of databases. Libraries across Canada that had accounts with Informart were able to access the database from inhouse terminals. With the success of this vendor, additional vendors were added including CAN/OLE a distribution network of CISTI, the national science library, and BRS in New York. By 1987 DIMDI, a biomedical service in Germany and Dialog, a US west coast vendor were added.

The 1980s also saw a change in the focus of subject matter indexed for SPORT with Gilles Chaisson convincing his board of directors that the database should include more sport sciences, sport-specific materials, recreation, health and leisure. During this decade, through his work in IASI, he pursued partners at other documentation centers to provide indexing for SPORT database.

Recent changes and purchase of a second generation inhouse software Cuadra STAR, from Cuadra Associates (*http://www.cuadra.com/*) now give SIRC the power and features needed to support their massive SportQuest website, the access to SPORTDiscus via short-term subscription on the website, their SPORTRetriever document delivery services and other service enhancements.

Thus did this large international, sport database come into full prime of life from humble documentation centre. Ulla de Stricker in her article on Gilles Chaisson in a recent issue of *Information Outlook* provides insight by stating (p. 39): *"Entrepreneurship and tenacity at its finest, vision and determination brought to fruition over the span of one outstanding information professionals career. Gilles Chiasson was a pioneer in the computer database arena…nothing stands in the way of a determined special librarian."*

Officially formed in 1987 following the amalgamation of the Australian Institute of Sport (AIS) and the Australian Sports Commission (ASC), NSIC assumed its national sport information mandate from its earlier, more narrowly-focused form as the AIS Information Centre. For many years Australian librarians and academics struggled with the ideas and recommendations for a sport information service, beginning with the initiative at the Footscray Institute of Technology where the ACHPIRST database was initiated in 1982. This sport database lacked secure funding and commitment, and was not able to provide a truly national information service.

Under the imaginative and forward thinking leadership of Nerida Clarke who began as Director of the AIS Information Centre in 1982 and continued on with NSIC until 1999, the important information storage, delivery and accessibility of Australian sport information has flourished. NSIC services include print information, video, photographs, and reference services from its headquarters in Canberra and through AUSPIN (The Australian Sport Information Network), its network of contacts and libraries across Australia and in Oceania area.

From the outset, NSIC, assumed a posture of cooperation and developed its AUSPORT database utilizing SIRC's SPORTDiscus record structure and procedures. These records, in turn, are sent to SIRC in Ottawa, making NSIC the largest contributor to SPORTDiscus. Each year NSIC delivers over 2000 records to SPORTDiscus, not only on coaching and sport sciences, but has added sport history and other Australian sport records lately. With this activity NSIC is fulfilling its national sport information mandate.

Collection building in the initial stages focused on the resources to meet the needs of its primary clientele; coaches, sport administrators, and sports researchers. More recently, the collection strengths can be seen in the very large video collection (all indexed for SPORTDiscus) and the use of advanced technology to give access to these and other video resources.

4.4. Amateur Athletic Foundation of Los Angeles
http://www.aafla.org/

This educational and research foundation for sport, was established in 1984 with the surplus funds from the 1984 Olympic Games in Los Angeles. The Paul Ziffren Sports Resource Center (PZSRC) was officially opened in 1988, containing the core collection from the former Helms Sports Hall of Fame library plus many other sources. Dedicated to the advancement of sports knowledge, research and scholarship, the PZSRC collection development, reference service and accessibility has benefited by technological advancements especially in the past few years.

The Library's collection, now amongst the largest in the United States, covers all aspects of amateur and professional sport and Olympic studies materials. Audiovisual materials, photographic images, archival material, and oral histories add to the depth of collection. Recent acquisition of the US Track and Field Sports Hall of Fame collection, collections from retired sports researchers, and defunct booksellers continue to fill the gaps in the topical areas. The serial collection shows strength in the newsletters and periodicals from the important sport media and business consulting companies where few other libraries have these materials available.

The most important factor, however, is the accessibility of the holdings of the Library. All materials acquired by the library are catalogued for their OPAC (available to internet users also), but also are reported to a major library union list. WorldCat, which is part of OCLC's FirstSearch Services (*http://www.oclc.org/*), depends on the contribution of unique cataloguing records and/or libraries attaching their records to already catalogued documents. The PZSRC makes a very welcomed contribution to WorldCat with many unique sport-related document records added on a regular basis.

Currently, the digitization of important reports, documents and serials and placing them on the AAFLA website has been the focus of work in the late 1990s.

4.5. INSEP, "Institut National du Sport"
http://www.insep.jeunesse-sports.fr/documentation/index.html

Founded in 1976 the INSEP is funded by the Ministry of Youth and Sports. The "Service de l'Information et de la Documentation" is responsible for the French sport sciences database called Heracles and has 17 institutional contributors to the database. (The INSEP website includes a section where each of the 17 centers list the periodical titles they index for Heracles.) The database focuses on national and international periodical articles and sport books, conference proceedings and video in French but has records in English and German from sport sciences periodicals published outside the French-speaking world. It is available via the web or as a separate file on the CD ROM subscription for SPORTDiscus.

Heracles and INSEP services are marketed by placing ads in French language sport periodicals, at conferences and to the 67 members of SPORTDOC network.

5. Recent developments in regional sport documentation centers and sport libraries

Contemporary initiatives on the part of special libraries, sport documentation centers and academic libraries play an important part in bringing sport information to primary clientele. These initiatives are so important to the health, growth and support of coach education, sport sciences research and education of students. As sport documentation centers implement automated and online services, establish instructive and educational websites their services will form a very important function within their national sport administrative structure and provide the "raison d'être" for their continued existence. These initiatives include online delivery of policy documents, educational coaching materials, contact information, key reports, reference and translation services.

In addition the important regional cooperation including union catalogs and collaborative indexing go a long way to enhance services and cut down on needless duplication of effort. Many libraries, documentation centers and regional/linguistic consortia are actively pursuing these projects. Below are a few highlights or recent activities that will help sport documentation centre to reach these information goals for the 21st century:

5.1. Asia

China Sports Information Institute *(http://www.sport.gov.cn/)* in cooperation with the Library of Beijing, the Beijing University of PE Library developed the China Sport Books Catalogue online (internal use at

the moment). Holdings include books from 16 physical education colleges and sports research institutes in 30 provinces (Asia bulletin, no 4).

The Hong Kong Sports Information Centre OPAC recently went public, making access to Chinese language and other sources from the Asia region accessible to Internet users.

The Japan Sports Information Center (Tokyo) is due to open in June 2001, the first national sports information center of its kind. The focus will be sports sciences and elite athletes. Sasakawa Sports Information Centre provides leadership in Japan and other regions in the "sport for all" area.

Serious work is also being done to promote the network called the Asian Sports Information Association in an effort to work together on cooperative projects.

5.2.   Europe and Latin America

SPONET, a fulltext sport sciences database and directory is available from the Information and Documentation Department of the Institute for Applied Training Science in Leipzig. This database has taken on the difficult task of finding the fulltext sources available on the Internet and indexing them. A good search engines allows boolean searching and has other features to aid the sport sciences researcher and provide easy access to fulltext sport sciences research.

The Olympic Studies Centre located at the Autonomous University of Barcelona in cooperation with the Olympic Museum and Studies Centre has presented a second generation website directory of Olympic institutes, scholars and other information. This more flexible and accessible website is valuable to the Olympic scholar.

NORSIB consortia for the Scandinavian countries are working together to provide links to sport and university library OPACs, provide information on research organizations and important databases.

SPORTCOM network for Spanish speaking countries in Europe and Latin America, under the leadership of Jose Aquesolo, has made progress in the areas of training sport information personnel in indexing procedures, contributing records to SPORTDiscus and Atlantes databases. The acquisition of communications technology hardware and software have assisted efforts of this group in their informational goals.

5.3.   North America

AAFLA

The digitization work at the Amateur Athletic Foundation of Los Angeles is a model to emulate in providing quick access to sport history and management serials, research documents and rare publications. Through the AAFLA website access can be made to significant and, sometimes scarce, materials of importance to researchers. There are few libraries that hold the Official Reports of the Olympic Games or the complete backrun of the *Olympic Review*. Both of these digitizing projects are well under way along with the digitizing of a number of sports history and management journals. The PZSRC has opted for the best type of digitized document that provides the researcher with searchable files. A researcher is able to search for key words or phrases allowing identification of the most miniscule detail in the text. In addition, some supplementary indexing is also done to enable a researcher to find a type of item in the digitized issues, for example, the advertisements of a company or all of the covers of each issue of the *Olympic Review*.

SIRC

On the SIRC website, a letter from the SIRC President and CEO, Debra Gassewitz stated that *"the philosophy of SIRC has changed from emphasis on a resource centre to a database producer"*. To this end SIRC has expanded the types of documents indexed for the database and now includes articles from online periodicals and other online, fulltext reports. The record structure has also been expanded to include author's and publisher's email addresses and other enhancements. In addition, SIRC is also providing improved services, with emphasis document delivery (SIRCExpress) via electronic Ariel services to libraries, and through its SPORTCUIT Project. The SPORTCUIT Project provides electronic articles and organizational information to thousands of coaches across Canada. Enrichment of the electronic storage and delivery of documents, encouragement to indexing partners to increase their indexing contributions to the database, plus aggressive marketing of their database assures the viability and longevity of this database.

5.4. Oceania

NSIC has also pursued the all-important electronic delivery of information to its primary clientele realizing that the busy coach, sport sciences student and researcher appreciates delivery to desktop of important materials. Among its many operations, NSIC maintains and enhances all aspects of the ASC website. Recently serials information files were added to the NSIC part of the website to help keep track of URLs for the ever burgeoning number of fulltext periodicals. It is a challenge to the information professional and sport sciences researcher to keep abreast of all the sport sciences resources available. These searchable files include:

- current Australian sports periodicals;
- sports periodicals indexed in SPORTDiscus and held by NSIC;
- sports Periodicals with a web presence; fulltext, table of contents and publisher.

NSIC is also pursuing the indexing of Australian fulltext sport documents so to more easily and quickly deliver information to their clientele. Maintenance, continued building and having easy access to their large sport video collection and assisting researchers in using video made for television programs is another current initiative. As Jill Haynes reported in her article in *inCite*: *"NSIC has co-ordinated the cabling of the AIS campus to provide coaches access to all pay-television channels in their offices and providing sports channels and the movie channels to athlete residences."*

A third thrust of NSIC's activities include partnership with the Australian Sport Commission's Outreach services to sport administrative and information centers in the Oceania region. These programs lead to the recent creation of the Oceania Sport Information Centre and continues with other sport bodies in the region.

Thus, enhanced technology is assisting the sport documentation centre, sport library and academic library to provide better, faster, and more indepth services to their researchers, coaches and other clientele.

Appendix
Summary table of sport documentation centers, sport libraries and academic libraries

An additional challenge to the information professional is assisting primary clientele in locating a document, periodical title, a report, a statistical compilation or other materials. Keeping track of which library or documentation center's OPAC is available via the web is a challenge. In writing this paper, it was important to find out what centers and libraries has full web access to information about their centre and the OPACs or databases. It was also important to see when the documentation center or library was established for this showed an important trend.

Listed here are many of the sport documentation centers, sport libraries and university libraries where collection strengths are in physical education and sport sciences. Efforts have been made to list the names in the original language and the English equivalent, to find the web address for the institution, the library OPAC or a database.

Abbreviations used:

> OPAC = Online Public Access Catalog available via the Internet
> Internal OPAC = Online catalog available to users inhouse or a limited area network
> Acad = Academic Library
> Govt = Government Funded and Supported
> Indep = Independently Funded Institution

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Africa

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Country	Center/Library Name & Website	Founding Date	OPAC / Database
Algeria	Centre National d'Information et de Documentation Sportives, CNIDS (Algiers)	1989 Govt	
Saudi Arabia	ASC Information and Documentation Center (Riyadh)	1990 Govt	
South Africa	South African Sport Information and Science Agency SISA (Cape Town) (SISA is being reorganized) *http://www.sportsa.co.za/*	1985 Govt	OPAC & SISA Database

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Asia

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Country	Center/Library Namse & Website	Founding Date	OPAC / Database
China, People's Republic of	China Sports Information Institute CSII (Beijing)	1958 Govt	Sports Doc Index & database China SB Catalogue
Chinese Taipei	Chinese Taipei Sports Information Center (Taiwan)	1992 Govt	
Hong Kong	Hong Kong Sports Information Centre, Hong Kong Sports Development Board *http://www.hksdb.org.hk/*	1991 Govt	OPAC
Japan	Sports Information Centre, Sasakawa Sports Foundation (Tokyo) *http://www.ssf.or.jp/00engli/00_01.html*	1991 Govt	Inhouse database
	National Sports Information Center (Tokyo) (This Center is scheduled to open in April 2001)	2001 Govt	
	Library, Graduate School of Education,(Physical and Health Education), University of Tokyo. *http://www.p.u-tokyo.ac.jp/guide/*	1949 Acad	OPAC
	Library, Cluster (School) of Sports Science and Physical Education, University of Tsukuba (Tokyo) *http://www.taiku.tsukuba.ac.jp/*	1946 Acad.	

Laos P. D. Republic	National Sport Information Centre (Vientiane)	2000 Govt	
Malaysia	Sports Resource Centre, National Sports Council of Malaysia (Kuala Lumpur)	1984 Govt	
Singapore	Singapore Sports Council Library, Singapore Sports Council *http://www.ssc.gov.sg/*	1973 Govt	OPAC Avail. in Fall 2001

Europe

Country	Center/Library Name & Website	Founding Date	OPAC / Database
Austria	"Oesterreichisches Dokumentations- und Informations-zentrum fuer Sportwissenschaften, Bibliothik des Institutes fur Sportwissenschaft und des Universitats-Sportzentrum Schmelz (USZ)" / Austrian Documentation and Information Centre for Sport Science, Institute for Sport Sciences (Vienna) *http://www.univie.ac.at/Sportwissenschaften/oedisp/*	1960 Acad.	OPAC
Belgium	"Dokumentatiecentreum HILOK, Vrije Universiteit Brussel" / Documentation Centre HILOK, Free University of Brussels	1985 Acad	
	"Hoger Instituut voor Lichamlijke Opvoeding, Rijksuniversiteit Gent" /Dept of Movement and Sport Sciences Library, State University of Ghent (Ghent)	1908 Acad	
	"Bibliotheek van het Instituut vor Lichamelijke Opleiding, Katholieke Universiteit Leuven" / Library of the Institute for Physical Education, Faculty of Physical Education and Physiotherapy, Catholic University of Leuven	1939 Acad.	
	"Informatie Centrum voor Sportwetenschappelijk Onderzoek" in Vlaanderen (Leuven)	1976	
	Sport for All Clearinghouse, Council of Europe (Brussels) *http://www.clearing-house.cfwb.be/body.html*	1974 Govt	
Czech Republic	IC-UP Information Centre, Faculty of Physical Culture, Palacky University ISFTK (Olomouc) *http://tin.upol.cz/*	1991 Acad	
Denmark	"Biblioteket Danmarks Hojskole for Legemsovelser" / Library of the Danish Institute for Physical Education DHL (Copenhagen)	1923 Acad	
	"Odense Universitetsbibliotek" / Odense University Library *http://www.ou.dk/oub/velkomst.htm*	Acad.	OPAC
Finland	Finnish Society for Research in Sport and Physical Education (Helsinki) *http://www.stadion.fi/lts/default.htm*	1933 Indep.	Internal database
	LIKES – Research Center for Physical Culture and Health (Jyvaskyla) *http://www.jyu.fi/~pjokela/likestp/*	1971 Govt.	Publishes Mono series

	Information Service, Sport Library of Finland SUK (Helsinki)	1946 Govt.	Internal OPAC
	University of Jyvaskyla Library JUL (Jyvaskyla) *http://www.jyu.fi/library/english/jydoken.htm*	1912 Acad.	OPAC – JYKDOK / FINSPORT database
France	"Service de Documentation de l'Institut National du Sport ed de l'Education Physique" (Paris) *http://www.insep.jeunesse-sports.fr/documentation/index.html*	1976 Govt	OPAC & Heracles database
Germany	"Bundesinstitut fuer Sportwissenschaft" / Federal Institute of Sport Science BISp (Cologne) *http://www.bisp.de/* SPOLIT - grips-Websearch on DIMDI (freely avail.) *http://www.dimdi.de/engl/dimadren.htm*	1970 Govt	OPAC /SPOLIT & SPOFOR databases
	"Zentralbibliothek der Sportwissenschaften, Deutsche Sporthochschule Koln ZBS" / Central Library for Sport Studies, German Sports School (Cologne) *http://www.zb-sport.dshs-koeln.de/*	1947 Acad	OPAC & six databases
	"Abteilung Information Dokumentation Sport am Institut fuer Angewandte Trainingswissenschaft" / Information and Documentation Centre, Institute for Applied Training Science, University of Leipzig *http://www.iat.uni-leipsig.de/* SPONET *http://www.iat.uni-leipzig.de/iat/sponet/default.htm*	1992 Acad	SPONET & SPOWIS databases
Greece	Sports Information Centre. Undersecretariate of State for Sports (Athens) *http://www.sport.gov.gr/1/16/e161.html*	1998? Govt	
Hungary	"Testnevelesi es Sporttudomanyi Kar (TF), Semmelweis Egyetem" / Library of the Faculty of Physical Education and Sport Sciences of Semelweis University (formerly the Hungarian University of Physical Education)(Budapest) *http://www.hupe.hu/01.html* and *http://www.sote.hu/*	1925 Acad	Internal OPAC only
Ireland	National Sports Information Services, National Coaching and Training Centre, University of Limerick (Limerick) *http://www.ul.ie/library/*	1993 Acad	OPAC
Israel	Wingate Institute for Physical Education and Sport, Library IWING (Netanya) *http://aleph.wincol.macam98.ac.il:4500/ALEPH*	1960 Acad	OPAC
Italy	"Centro di Documentazione Sportiva , CONI (Comitato Olimpico Nazionale Italiano) and Scuola dello Sport" / Sport Documentation Center for CONI and Sport School (Rome)	1984 Govt	
The Netherlands	"Nationale Sportbibliotheek, Haagse Hogeschool" /University of Professional Education, National Sport Library (since 1990) (The Hague) *http://www.hhs.nl/*	1965 Acad.	OPAC
Norway	"Norges Idrettshogskoles Bibliotek"/Norwegian University of Physical Education and Sport	1968 Acad	OPAC-NIDRHS/

	Library(Oslo) *http://www.nih.no/english/*		FORSKDO K database
Poland	"Akademia Wychowania Fizycznego, Centralny Osrodek Informacji Naukoweij COIN" / Academy of Physical Education, Center of Documentation & Information (Warsaw) *http://www.awf.wroc.pl/*	1972 Acad	OPAC
Portugal	Faculdade de Motricidade Humana, Universidade Tecnica de Lisboa (Library??)(Lisbon) *http://www.utl.pt/*	1940 Acad.	
	"Documentacao y Informacao, Secretaria de Estado do Desporto" / Documentation and Information Dept., Secretary of State for Sports (Lisbon) *http://www.sedesporto.pt/*	1965 Govt	
Romania	"Centreisl de Cercetari Pehtris Problemele Sportwzisi CCPS" (Bucarest)	1962	
Russia	Central Organ of Scientific-Technical Information for Physical Culture and Sport (Moscow)	1980 Govt	
Spain	"Biblioteca de l'Esport, Generalitat de Catalunya, Secretaria General de l'Esport" (Barcelona) *http://www.gencat.es/*	1986 Govt	
	"Instituto de Ciencias de la Educacion Fisica y el Deporte, Consejo Superior de Deportes" (Madrid) *http://www.csd.mec.es/*	1980 Govt	17th/18th century doc database
	"Biblioteca Deportiva, Instituto Nacional de Educacion Fisica" / Sports Library, National Institute of Physical Education (Madrid) *http://www.inef.com/*	1967 Acad	Ph.D. database
	"Instituto Andaluz del Deporte, ,Junta de Andalucia, Consejeria de Turismo y Deporte & Universidad Internacional Deportiva de Andalucia" (Malaga) *http://www.uida.es/comienzo.html*	1984 Govt	
	"Biblioteca y Centro de Documentacion del Edificio de Educacion Fisica, Universitario de Tafira" (Canary Islands) *http://www.culturacanaria.com/deportes/ecade.htm*	1987 Acad	
Sweden	"Biblioteket Idrottshogskolan" / Library of the University College of Physical Education (Stockholm) *http://www.ihs.se/Biblioteket/meny.htm*	1813 Acad	OPAC
	"Biblioteket vid Sveriges Riksidrottsforbund" / Library of the Swedish Sports Confederation (Stockholm)	1986 Govt.	
	"Orebro Universitetsbibliotek" / University Library of the University of Orebro (Orebro) *http://www.oru.se/ub/*	1966 Acad	OPAC - Voyager

Switzerland	"Ecole Federale de Sport de Macolin/Eidgenoessische Sportschule Magglingen/Scuola Federale dello Sport di Macolin"/Swiss Sports School Magglingen, Library	1944 Acad	Internal OPAC?
	Olympic Studies Centre Library, Olympic Museum (Lausanne) *http://www.museum.olympic.org/e/studies_center/studies_center_e.html* RERO: *http://www.rero.ch/vtls/english/*	1982 Indep.	OPAC via RERO
United Kingdom	Information Service, Sport England (London) *http://www.english.sports.gov.uk/resources/resources_1.htm*	1972 Govt.	Sports Database (internal)
	Library, SportScotland (Edinburgh) *http://www.sportscotland.org.uk/contents/publications/libarypage.htm*	1972 Govt.	
	Information Centre, Sports Council for Wales (Cardiff) *http://www.sports-council-wales.co.uk/information/information1.htm*	1976 Govt	
	National Sports Medicine Institute of the United Kingdom (London) *http://www.nsmi.org.uk/libr.htm*	1987 Govt	SMART Database
	Sports Documentation Centre, Centre for Sports Science and History, University of Birmingham *http://is.bham.ac.uk/mainlib/about/arrange/censsah.htm*	1969 Acad	OPAC & Sport Doc Monthy Bulletin (print)
Yugoslavia	"Sport Indok Center, Zavod za Fizicku Kulturu"/Institute for Physical Culture (Belgrade)	1965 ? or 1956?	

Latin America

Country	Center/Library Name & Website	Founding Date	OPAC / Database
Argentina	Information and Documentation Service of the Physical Education Institute (Mendoza)	1993	
	"Asociation Argentina de Deportes, Educacion Fisica y Recreacion Biblioteca" *http://www.sportscenter.com.ar/caid.html*	Indep.	
Brazil	"Centro de Documentacao, Sistema Brasileiro de Documentacao e Informacao Desportiva, BCEDOC" (Belo Horizonte)	1985	
Chile	Sports Information Centre CID-EFIVALPO, Universidad de Playa Ancha (Valparaiso) *http://www.upa.cl/*	1993 Acad.	
Colombia	"Biblioteca, Instituto Universitario de Education Fisics, Universidad de Antioqua" / Library of the Sports and Physical Education Institute, University of Antioquia *http://quimbaya.udea.edu.co/~edfyddir/*	1975 Acad.	
Costa Rica	"Escuela de Ciencias del Deporte Biblioteca Clemencia Consejo Chacon" (Heredia) *http://www.una.ac.cr/depo/*	19?? Acad.	

Cuba	"Centro de Informatica del Deporte INDER" / Centre for Sports Research and Computing	19?? Govt	
Venezuela	Centre for Information and Documentation of the Panamerican Institute of Physical Education (Estado Zulia)	1991	

Country	Center Name	Founding Date	OPAC / Database
Canada	Sport Information Resource Centre/Centre de documentation pour le sport, SIRC (Ottawa) *http:www.sportquest.com/index.html*	1973 Indep.	SPORT-Discus database
	Coutts Library and Rutherford Library, University of Alberta *http://www.library.ualberta.ca/*	1905 Acad.	OPAC - Neos
	Libraries of the University of Western Ontario *http://www.uwo.ca/libinfo/*	1878 Acad.	OPAC
United States	Paul Ziffren Sports Resource Center, Amateur Athletic Foundation of Los Angeles, (Los Angeles, CA) *http://www.aafla.org/*	1984 Indep.	OPAC & Fulltext Serials & Docs
	Health, Physical Education and Recreation Library, Indiana University, (Bloomington, IN) *http://www.indiana.edu/~libhper/index.html*	1978 Acad	OPAC - IUCAT
	Babson Library, Springfield College (Springfield, MA) *http://www.spfldcol.edu/*	1885 Acad	OPAC - Voyager
	Information Resource Center, United States Olympic Committee (Boulder, CO)	1981 Indep.	Internal OPAC only
	Applied Life Studies Library, University of Illinois, (Urbana-Champaign, IL) *http://www.library.uiuc.edu/alx/*	1949 Acad	OPAC

Country	Center/Library Name & Website	Founding Date	OPAC / Database
Australia	National Sport Information Centre, Australian Sports Commission (Canberra) *http://www.ausport.gov.au/nsic/*	1982	OPAC AUSPORT database & SPORT-Discus
Fiji	Oceania Sports Information Centre (Suva, Fiji) *http://lali.usp.ac.fj/osic/*	1997	
New Zealand	Hillary Commission for Recreation and Sport Information Service (Wellington) NZHILCOM	1987	

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Problems of Interculturality in Sport
The Case of the Subsaharian Countries

Joerg Winistorfer
Associate Dean, University of Lausanne, Switzerland

The text of this conference will be distributed separately from the publication of the proceedings.

Specific Sessions
Sports Information Management
New Technology in Sports Information
(S21, S22, S23, S24)

Thursday, 26th April 2001

Moderators:

S21:
Gretchen Ghent
Vice President for North America of IASI and Chair of NASLIN, Canada

S22:
Maria Lluïsa Berasategui
Sports Library, General Secretariat for Sport of the Generalitat of Catalunya, Spain

S23:
Jose A. Aquesolo
Andalusian Sports Institute of Malaga, Spain

S24:
Anitta Pälvimäki
LIKES Information Service for Sport and Health Sciences, Finland

Development and Application
of a Virtual Library in Sports Science
S21

Hartmut Sandner, Roland Regner
Institute for Applied Training Science,
Department of Sport Information Documentation, Germany

1. Preface

For a long period in history, books, journals, scientific papers and other similar sources, hand-written or printed on white paper have been considered as one gateway to knowledge. Yesterday, when we were visiting a library and asked a friendly librarian for some books on Coaching Science, a few days later only we received some volumes containing all we needed to know on the subject. Today, we have a different situation. Today, we are sitting in front of a computer screen through which hundreds of millions of pages containing all about everything.

The Internet has made true the old saying: *"All I know is I know nothing and I will never get to know even a thousandth of what I should know."*

Fortunately the friendly librarian has become an information specialist, who is able to assist you with the search for relevant information. You will not meet him in your computer but you will find the results of the work he has done for you, for the potential user of the information system. One of the information systems that has been created to assist the sport scientist, the coach, the physical education teacher, the manager of a sport club and all the people who are interested in sport, is the Virtual Library in Sport Science of the German Institute of Applied Training Science in Leipzig.

What we want is to create an easy to use system for people like you, working hard, to achieve top results in high performance sport – coaches and scientists who really know that it is very important to keep in touch with the latest developments in sports science. But the situation today would require a huge amount of time to analyse all the news brought to you by books, papers, and magazines and, during the last few years, by the world-wide Web.

Figure 1
SPONET & SPOWIS: Members of one family

I would like to introduce you to the different databases which have been created at our Institute to form a virtual library to assist scientists and coaches. This virtual library represents a whole family of different electronic means. I will in particular acquaint you with SPONET and SPOWIS.

Storage and transfer of information and knowledge, the analysis of scientific papers, the critical discussion of the findings of sport-specific and generalized tests – all this belongs to the basic routines of all scientists. The crucial question for all potential information users is: when, where and how to get easy access to relevant information.

The Department of Sport Information Documentation at our Institute has got the task of preparing up-to-date information with relevant content using all information channels which we have access to in an easy to survey presentation manner.

The tasks of the Department of Sport Information Documentation are for example:

−   to run a scientific library specialised in training science;
−   to develop a specialised online sports-literature database (SPOWIS);
−   to distribute a bimonthly presentation of selected information to our users at the Institute in their field of research interest;
−   to develop and run CD-ROM- and Internet-based multimedia databases for different sports;
−   to collect and index Internet sources on sports science in the SPONET project;
−   to host and administer the IAT-Website;
−   to assist scientists and coaches in their online search for relevant information.

Most of these tasks are based on modern electronic means. Thus it will be possible and necessary to integrate them into our recent project entitled *Virtual Library in Applied Training Science*.

2.   Electronically-based contributions to the creation of the virtual library

As shown in figure 2, several electronically-based results of scientific work can easily be integrated in our project: scientific papers developed by working groups of the IAT, technical descriptions of measurement procedures and training facilities, didactic material for the training and further qualification of coaches.

Figure 2
Family of electronic means

The traditional library catalogues will also find their place in the form of the OPAC. The potential reader will be able to select and order the specialised literature needed online. But let me draw your attention to one of the main products of our department – the SPONET database containing information on thousands of highly relevant Internet sources on sports science from all over the world.

Figure 3
Online Sport databases of the IAT (12/2000)

Database	Content	Input	Partner
OLYMPIA	Results, Olympic Games	IDS	SPORTBOX
SPONET	Sports science Internet Resources	IDS	
SPOWIS	Sports science Literature	IDS	
WRESTLING DATABASE	Wrestling, Athletes, Results	IDS, FG7	FILA
WEIGHTLIFTING DATABASE	Athletes; Results	FG5	IWF
TRIATHLON DATABASE	Athletes; Results	IDS, FG4	DTU
CD-SPOWIS	Sports science Literature	IDS	Czwalina

As far as we know, only a small number of databases for sports science literature is accessible via the World Wide Web. Sport Discus Online represents more than 300,000 sources from all fields of sport. The German Database SPOLIT (sports literature) by the Federal Institute for Sports Science in Cologne is sold in a CD-ROM version, and was presented with an online version recently. There is also a CD-ROM version of SPOWIS (sport science), the database on sports science literature developed by our institute. But since January 2000 the whole database with more than 119,000 sources is open to the sports science community world-wide.

Figure 4
SPOWIS front page on the Internet

Let us return to the family again: SPONET, the database for Internet-Resources. What kind of database is this ? What was the idea ? Why it is necessary to develop such a project ? Today's Internet knows thousands of more or less specialised search engines.

Let me show you simply as an example the result of the search for the words **sport**, **sport science** and "**Sportwissenschaft**" in some well known search engines. As you can see in figure 5 you will find a huge number of sources.

Figure 5
Search results ins general search machines

	SPORT	SPORT SCIENCE	SPORT WISSEN SCHAFT
YAHOO!	26027	1350	552
ALTAVISTA Search OnSite Knowledge	11701780	1547	25730
Google	15000000	4040	22100
LYCOS Ihr persönlicher Internet Guide	14596351	2366	13119

It is absolutely impossible to analyse all these sites. Tests carried out by providers of search tools on the Internet have shown that the maximum number of sources visited by users will be limited to 5 to 10. The conclusion to all of this is that the sports scientist will have serious problems to find the sources that will meet his scientific request. As far as we know, there was no search machine specialised in identification of relevant Internet resources for the sports scientist, coach or athlete. This situation was changed on 27 September 1999 when we launched the find machine SPONET.

Figure 6
SPONET's objectives

Our goal is to help our users by pre-selecting Internet sources and preparing them for easy search. The coach using our system is offered a specialised database with a variety of search options to identify the information he or she is interested in. Thus they can spend more time on their main task, the training process and work with the athletes. The database can be found under the address: *http://sponet.de*. Until now more than 5,500 sport and sports science WWW sources have been input into the database.

Figure 7
SPONET front page

Figure 8
SPONET search screen

Several options have been made available to find resources:

– free text search in all fields (for almost all of the sources there are German or English summaries available);
– keyword search with up to three keywords which can be combined with either "and" or "or". For this reason a list of about 700 keywords is used today to index the resources;
– notations (complex groups of selected contents, for example one group for endurance sports);
– scientific level (you may choose between basic, intermediate and advanced);
– type of document (for example e-journal or an individual research report - adopted from Dublin Core;
– language;
– publication country;
– search the input by date.

All these search tools are available in German and English.

The database is continuously being expanded and is considered to be an addition to the already existing ways of identifying information in electronic library catalogues or electronic databases. As far as we know, SPONET offers a genuinely new way of finding relevant WWW resources. All resources are evaluated, indexed and then input into the database by an experienced team of indexers having done index work for more than 15 years.

We invite all of you to visit the SPONET site, to search in it and to consider contributing to it with new or yet to be inputted WWW sources. All tips are very welcome and we are ready and willing to introduce any interesting new resources as soon as possible, to make them available to the international sports science community.

Figure 9
SPONET icon

On the SPONET site you can find a prepared icon that can easily be downloaded. If you are a Webmaster responsible for the WEB-presentation of your sports club, you can integrate it directly into your page. You may also link the sign to a preformatted query. Clicking the sign will then directly result in a list of relevant links. The list can be sorted either alphabetically or by time. "Time" means the date of input of the source into our database.

SPONET consists of sub-systems:

1) the URL-Database for the storage of relevant Internet-Links;
2) the database interface for the management of database input;
3) the history database for the analysis of usage;
4) the CGI-Scripts for connection between Internet surface and the database;
5) the Internet-surface for interaction with potential users of the system.

Figure 10
SPONET system
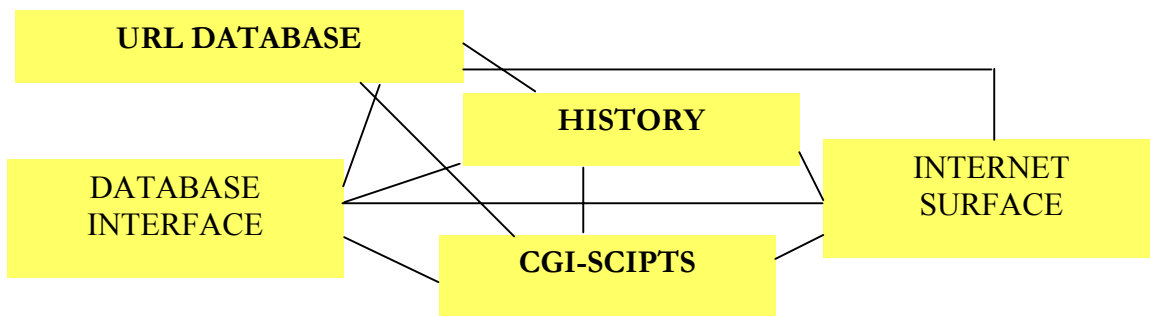
The html-pages and the scripts are stored on the WWW-Server of the IAT that is open to the public.
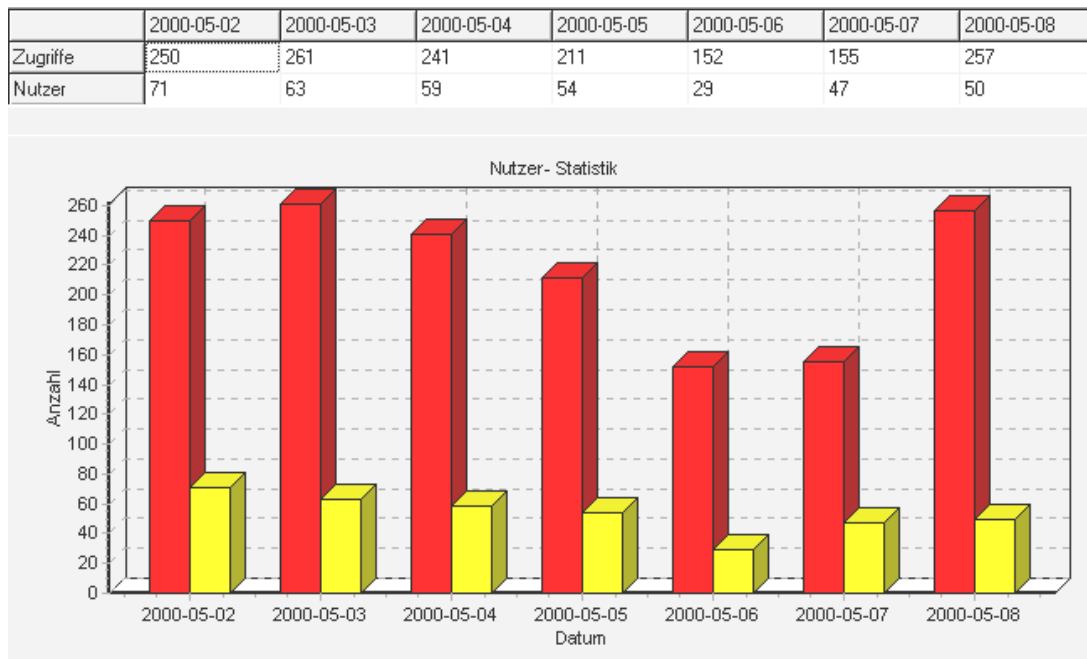
The Windows NT -Server communicates with Windows 98 Clients. The database entries are directly accessible through the Internet. The Database surface was compiled with Borland's Delphi. The Database system is MySQL. The database can be accessed directly by MySQL or by ODBC in connection with the Borland Database Engine (BDE). The Internet surface was created and maintained with Microsoft's FrontPage 2000. The future integration of the Microsoft FrontPage Extensions will help us to extend the interactive functions of the database.

4. **Users statistics**

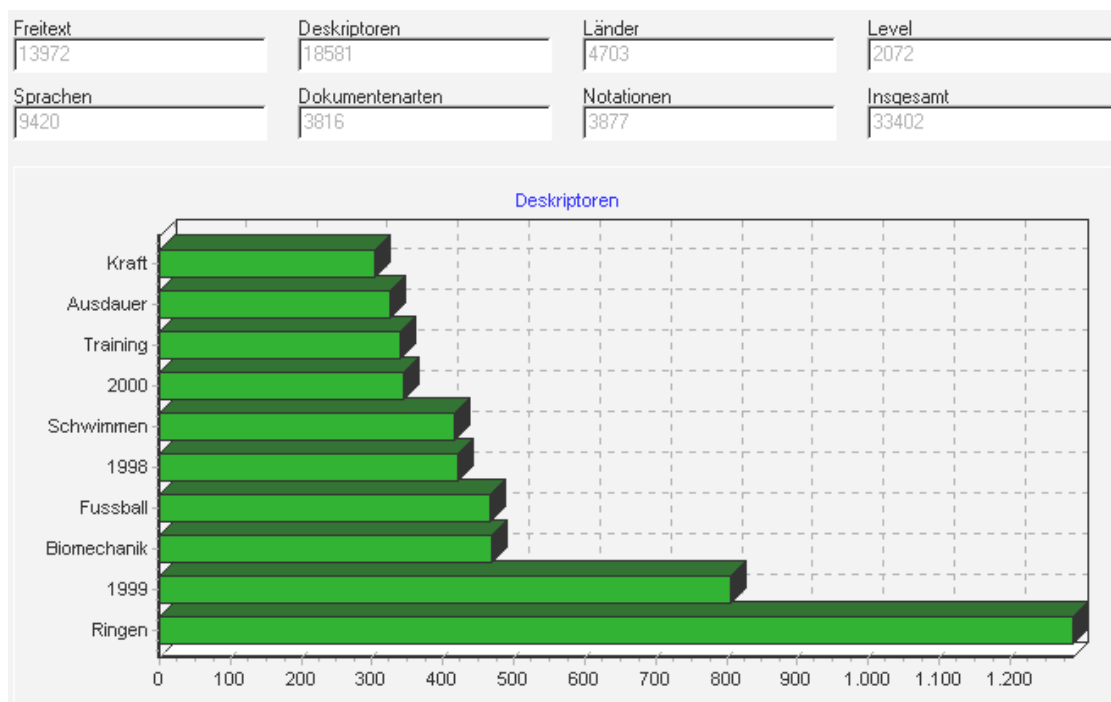Until January 31, 2001 the SPONET search engine was accessed 83,845 times for retrievals.

During the past weeks we had a few opportunities to demonstrate the project both to scientists, elite coaches, managers and media representatives. There was great interest in such a database among all of them. This attitude towards our database encourages us to continue in our approach to create an Internet-based information system for use by different user groups. The primary target group will remain sports scientists who will get flexible access to the system with all its information.

Figure 11
Use of SPONET

	2000-05-02	2000-05-03	2000-05-04	2000-05-05	2000-05-06	2000-05-07	2000-05-08
Zugriffe	250	261	241	211	152	155	257
Nutzer	71	63	59	54	29	47	50

Nutzer- Statistik

We can also see what kind of questions the users ask. With the help of the history database we can both analyse the use of different search categories and count how often a special term has been used.

Figure 12
What do users search for ?

Freitext	Deskriptoren	Länder	Level
13972	18581	4703	2072
Sprachen	Dokumentenarten	Notationen	Insgesamt
9420	3816	3877	33402

Deskriptoren

The majority of our users make use of the opportunity to search for controlled terms. Here you can see the Top Ten List. The frontrunner is wrestling. The main reason for that may be the integration of a direct-search-button into the official website of the German Wrestling Federation. The rare use of other search criteria such as country, level, type of document shows us that we must pay more attention to the improvement of our help tools. We should try to stay in contact with our users. Reading papers like this is one way to do so. Another form of experience exchange will be the Internet discussion forum that we launched in 1999.

5. Search example

Figure 13
SPONET search screen

We open the search screen and select the controlled term "springboard diving". To do this we should go to the first white field on the left side, scroll down the list box and check the line with "springboard diving".

For SPONET that means *"Please show me all Internet sites you have selected, where I can find something on springboard diving !"*

We simply click the search button and find more than 40 sources on springboard diving.

Imagine you are a coach for springboard diving and you have heard of a website with a selection of animated sequences of some difficult dives, but you don't remember the Internet address. Well this might be a problem for you, but it is no problem for SPONET.

Again let us select the controlled term "springboard diving" and combine it with the document type "Multimediadocument".

The result screen in figure 14 shows two sources corresponding to our search. You can have a look at the description of the source. You will find the controlled terms, title, author, date of first registration in SPONET and an abstract.

| sort by: | **level** | date listed | alphabetical |

found sets: 2

1. Anna Lindberg Homepage
2. Platform Diving

[back] 1 [next]

26080 Suchanfragen seit 13.08.1999

Copyright Sponet

Sport scientists', coaches' and athletes' ultimative findmachine

URL	http://www.cc.gatech.edu/gvu/animation/Areas/humanMotion/diver.html
description	We have developed a simulation of a human diver with 38 controlled degrees of freedom. The human model can perform a number of 10 meter platform dives. The dynamic model of the diver consists of 15 rigid bodies connected by rotary joints. The dynamic properties of the rigid bodies were calculated using densities for each body part measured from cadavers[2], and algorithms for computing moments of inertia from polygonal objects[5]. The equations of motion were generated using a commercially available package, that uses a variant of Kane's method with a symbolic simplification phase[8]. The control system for the diver is hierarchical. The low-level control is provided by proportional- derivative servos that move the joints towards their desired values. Balance on the diving board is provided by a controller at the ankle that computes the angle for the ankle that would place the body's center of mass over the feet. This angle serves as a desired angle for the low-level PD control. High-level control for the dive is provided by a state machine that alters the desired configuration of the diver. Five states are used in the 10m platform dives: Compression, Decompression, Flight-Phase 1, Flight-Phase 2, and Entry. The high-level control alters not only the desired values for the joints but also the gain on the low level PD servos. For example, the gains required for the compression phase of the dive are higher than the gains required for the flight phase. The gains and set points for the controllers were tuned by hand to ensure that the diver performs the dive and enters the water vertically.
german title	Turmspringen
english title	Platform Diving
original title	Platform Diving
first save	1999-08-11 15:44:04

The second link directly leads to the site you were looking for. Here you can download wonderful 3-D simulations of difficult dives.

6.   Status of and prospects for our Virtual Library in Sports Science project

SPONET is a product of the department of Sport Information Documentation at our Institute, and currently has more than 5,500 entries.

It is recommended to organise a division of labour for the system both at national, and also at international level including sports scientists, information experts and software developers.

It is worth considering whether such a project could become a nation-wide or international one with many specialists and centres participating. There are many specialists in the field of sports (in science as well as in the field of coaching in individual sports) in many countries. It would be very useful to find a way in which many could share their knowledge and experience.

The individual experts could be responsible for one defined segment. The co-ordination and integration of the different contributions could be the task either of one "clearing centre" or of a couple of "sub centres" in different regions or for different groups of knowledge. Based on Internet technology all contributors can then share all data.

Recent developments in just these technologies lower the possible hurdles for the application of such a system. The history of our virtual library is an extremely short one. But we are sure that the project meets the needs of a variety of user groups and help them to work with the new technologies.

Home Delivery: Supplying Up to Date Information to Thousands of Coaches and Sport Professionals

S21

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Abstract

Access to sport information throughout the world has always been central to the mission of IASI. In keeping with this mission, SIRC has developed a new method to ensure that information is accessible to large groups of individuals in a cost-effective manner. In this paper, the author highlights certain specific aspects of SIRCUIT, focusing on enabling individuals to benefit from a regular delivery of information relevant to their work and interests.

1.   Introduction – Two challenges

One, it is often heard that end-users - individuals searching for relevant information - are frustrated because they know information exists, but they cannot get their hands on it. Two, time spent looking for information is costly as not all searchers are aware or capable of using information tools in an efficient manner.

In order to address these two challenges, SIRC has developed a new product to assist these individuals, confirming their belief that the needed information does indeed exist and that it is available.

The original mandate of SIRC included a focus on providing a means to educate and further develop coaches in Canada. SIRC has now used current technology and shared resources to support that focus. The coach - communication - education triad, central to the philosophy of SIRCUIT is the driving force enabling it to succeed.

2.   Overview

1) What is SIRCUIT ?

   This new product is a current awareness tool to keep coaches and sport professionals informed of new developments in their sport, and to establish communication lines between the sport federations and the grassroots level. We want to ensure that these people are not left in the dark about current activities happening across the country in their field of activity.

2) Why is it necessary ?

   Literally thousands of individuals throughout North America are involved in coaching athletes. They may not have time to look for new information relevant to their activities. Furthermore, many of them, while certified, may lose touch with their federation over time and therefore no longer be aware of news relevant to their practice. SIRCUIT allows the sport federations to share administrative information with its membership, while providing an educational tool to those interested in improving their skills.

3) What is the scope ?

The scope of SIRCUIT is largely dependent on each individual membership subscriber. As the interests and concerns of each sport federation are different, the content directed to the recipients will reflect this difference. The main goal is to ensure a regular flow of information, thus keeping the membership aware of new policies, new concerns, and new administrative decisions, as well as providing a means to further their development through continuing education.

4) When was it implemented ?

The first SIRCUIT began in June of 2000. The Canadian Ski Coach Federation was the first to sign up. The CSCF request included such topics as biomechanics, children and youth, as well as coaching in the areas of alpine, downhill and slalom. This demonstrates that the requirements of particular sport federations can vary. Indeed, it is sometimes the case that the information requested is not sport specific, but rather general in scope, covering multiple disciplines. The Canadian Yachting Federation representative stated that specific knowledge about yachting was well-known, and that general material about mental training and performance was needed instead.

5) Implications of this initiative.

SIRC is playing an important part in its role as communication and technology leader in the field of providing access to sport information throughout the world. In taking the initiative of starting up SIRCUIT, SIRC is sharing its resources electronically in order to ensure such access to information.

In this area of rapid change in both user expectations and availability of products to respond to these demands, SIRC remains at the forefront of the information provision environment. SIRC will continue in the same manner in order to ensure that the needs of the user community are met, concentrating on the areas of communication and technology.

In keeping with the nature of the environment in which SIRCUIT is produced, it is likely that the concept and distribution methods will evolve as time goes on. Indeed, the many issues that affect content, distribution and subsequent use will have a direct effect on the technical and production questions that relate to this venture.

IASI Internet Café at the 2000 Pre-Olympic Congress
S21

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1. Background

At the 1996 ICSSPE Pre-Olympic Congress, held in Dallas, Texas, the International Association for Sports Information (IASI) presented two papers aimed to inform delegates on the role of sport information and IASI. These papers were not well attended. In retrospect this was not particularly surprising, as there were a number of simultaneous sessions and delegates tended to wish to hear papers in their own particular area of expertise.

The 2000 Pre-Olympic Congress - International Congress on Sport Science, Sports Medicine and Physical Fitness (ICSSPE) was held in Brisbane, Australia just prior to the Sydney Olympic Games. For the 2000 ICSSPE Pre-Olympic Congress it was decided to try something different to promote IASI in the Sports Science/Physical Education international community. The idea of the Internet Café was born.

An Internet Café comprises a group of computers providing free Internet access to Congress delegates. The aim of the Internet Café was to raise the profile of IASI through naming rights to the Internet Café, promote sport information and to use the Internet to showcase IASI products, and services provided by IASI members.

2. Resources promoted

A timetable for sessions on Internet resources related to the themes of the Congress was published, and placed in each delegate's satchel. A session on sport related databases was also scheduled. Lists of resources for each of the subject areas were prepared by staff at the National Sport Information Centre, Australian Sports Commission and used as the home page for the Internet Café *http://www.ausport.gov.au/nsic/lib/bookmark.htm*. Each of the list of resources included links to relevant sites, organisations, and included all the databases of interest to the client group. The lists were printed and available at the Internet Café.

Due to the large number of clients wishing to use the Internet Café a booking system was instigated. The queue of people to use the Internet Café made it almost impossible to keep to the timetable of listed themes, and any sessions offered were one to one on specific subjects. The home page for the Internet Café was the first one met by all clients, and many browsed through this area before they started sending their email. The printed lists of subjects were very popular, and received a great deal of positive comments. They have been promoted by ICSSPE since the Congress, and continue to be considered a valuable resource. It is planned these lists will be placed on the IASI Home Page.

Promotional material was provided for the following:

- SPORT Discus
- Scholarly Sport Sites
- Sponet
- Heracles
- IASI

3. Budget

As IASI does not have a large budget, it was soon obvious we would need sponsorship to enable us to run the Internet Café. Fortunately, after considerable negotiations this sponsorship was forthcoming.

- Choice Connections, a small local Apple distributor, provided 10 iMacs for the three days of the Trade Show.
- Telstra, an Australian telecommunications company, paid for Internet access.
- ICSSPE and Sports Medicine Australia, the organisers of the Congress, provided a free booth for the period of the Trade Show.
- INSEP produced a professional range of banners advertising the IASI Congress, IASI, and Heracles. The IASI banners will be able to be used at future meetings. Postcards promoting IASI and the Congress were also produced by INSEP and copies were placed in the satchels for all delegates.

The 2000 Pre-Olympic Congress was held in Brisbane, a city over 2,000 km from Canberra where the organisers were based. In addition to the cost of travel and accommodation, it meant equipment could not be borrowed from the organisation for the duration of the Congress.

A budget of USD 900 was approved for the Pre-Olympic Congress at the IASI Annual Meeting in Chile. A Presidium decision increased this budget by USD 1,000 to cover additional costs. The USD 1,000 was the amount received by IASI as a result of a commissioned article written by the IASI President.

The final breakdown of the costs to IASI of the Internet Café were as follows:

- Printing   USD   410
- Accommodation   USD   180
- iMac installation   USD   508
- INSEP costs   USD   1,243
  TOTAL   **USD   2,341**

Considerable in-kind support was provided by both the Australian Sports Commission and INSEP.

4. Staffing

The Internet Café was manned during the hours of the Trade Show 9 am – 5 pm for the three days Saturday 9th September to Monday 11th September 2000. Alain Poncet from INSEP, France and Jill Haynes from the Australian Sports Commission ran the Internet Cafe during the three days. Maleah Harris, the Manager of the Queensland Academy of Sport Information Centre also helped out during the busy lunchtime periods on all three days.

As this was the first Internet Café IASI had been involved with, and there is not much literature available on running an Internet Café at a Congress we had little idea what to expect.

We soon discovered the Internet Café was going to be extremely popular, and had to create an instant booking system to ensure fair access to the machines. A time limit for clients was also set, although this was not easy to police.

The iMacs were setup with browser software only. This presented problems for clients who received attachments that they were unable to read due to the lack of the relevant software on the machine. There were also a number of clients receiving emails not written in the roman script, as the required fonts were not downloaded to the iMacs, they could not read their emails. This was a particular problem for the Chinese delegates.

A number of clients did not have a web based email account, but they wished to send and receive email. We assisted these clients to set up Hotmail or other free web based email accounts. Hotmail was popular with the instructors as it provided instructions in a number of different languages, and as we became familiar with the commands it allowed us to assist with the instructions in those languages.

The Internet Café provided the only Internet access at the Congress. It was used for all Congress business, including the sending of press releases. It was by far the most frequented booth at the Trade Show, and assisted with directing traffic to the Trade Show.

6.   Usage statistics

There were 1,314 delegates at the ICSPPE Pre-Olympic Congress from 70 different countries. 586 delegates (44%) were from Australia.

The total number of users of the Internet Café over the three days was 544, many of these were repeat users. The total amount of time the Internet Café was open was 212 hours and 30 minutes.

On the final day of the operation of the Internet Café more detailed statistics were kept. All users were asked their country of origin and reason for using the Internet Café. A record was kept of their time spent online.

6.1.   Statistics Monday 11th September 2000
Connection time

Hours of operation: 9.00 - 16.15 for 10 iMacs - total 72h30
Number of customers: 206
Duration of connection: 72 hours 30 min
Average connection: 21 minutes
Longest connection: 60 minutes
Shortest connection: 2 minutes

Connection between	0 and 5 minutes	21 clients
	6 and 10 minutes	50 clients
	11 and 15 minutes	33 clients
	16 and 20 minutes	30 clients
	21 and 25 minutes	26 clients
	26 and 30 minutes	14 clients
	31 and 35 minutes	16 clients
	36 and 40 minutes	05 clients
	41 and 45 minutes	06 clients
	46 and 50 minutes	03 clients
	51 and 55 minutes	01 clients
	56 and 60 minutes	01 clients

Comment: The average time for using the Internet Café was 21 minutes. Clients were not asked to finish their session if there was nobody waiting. This is the reason for the clients using the Internet Café for the longer connection times.

6.2. Reason for using the Internet Café

Clients were asked whether they were using the Internet Café for:

- Email only   156 clients (76%)
- Surfing the Internet   20 clients (10%)
- Both email and surfing   30 clients (14%)

Comment: Email was the main reason for using the Internet Café. From observation the main reasons for surfing the Internet were:

- Congress related eg locating a referred paper, checking contact details
- Keeping up with the newspapers from home
- Planning travel post Congress

6.3. Statistics by country

The Internet was used more frequently by those clients whose home country was in a different time zone to Australia, or who had to make a longer trip to Australia to attend the Congress. Australians, New Zealanders and Japanese who made up 54% of the total number of delegates, only comprised 25% of the Internet Café users. Australians may have brought a laptop and have access to a local ISP to access the Internet. The heavy use by international delegates highlights the need for an Internet Café at International Congresses (see figure "Usage by country").
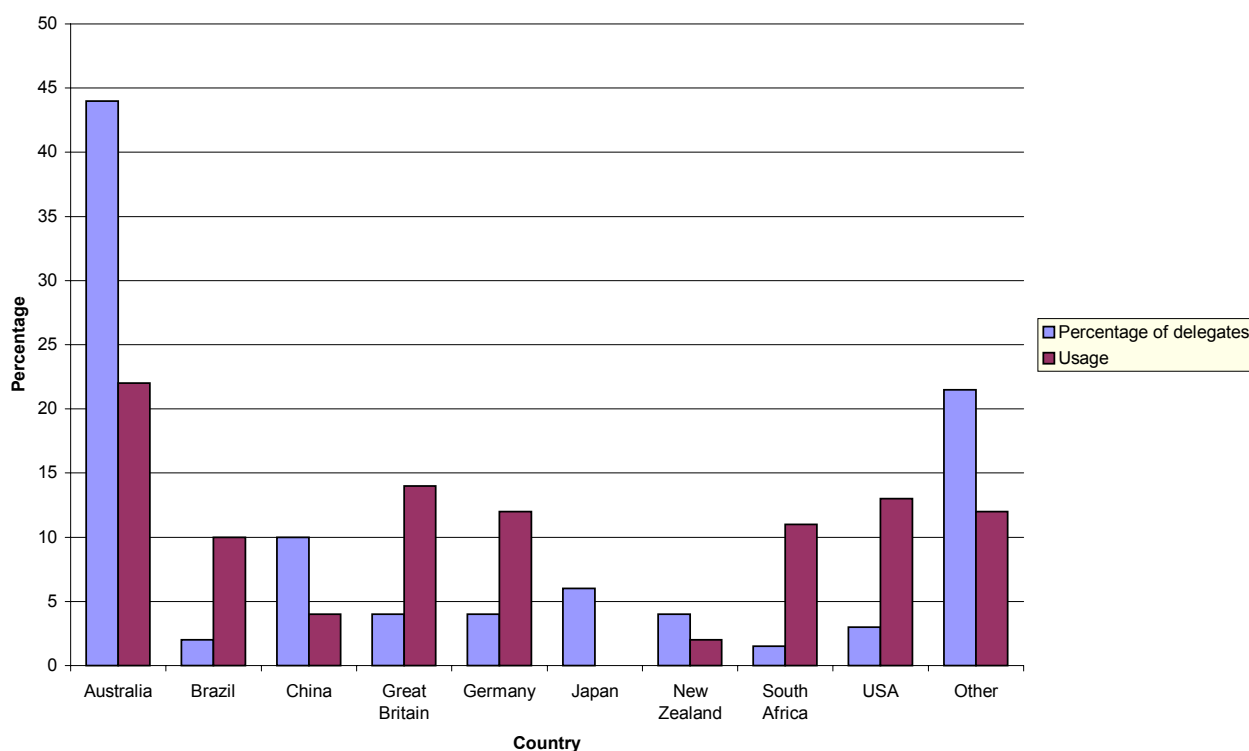
The IASI Internet Café was a very successful venture, and helped to raise the profile of IASI in the international sporting community.

It is a marketing tool IASI should consider using at future international Congresses. To obtain the best benefits for IASI it is important to have an IASI member based locally who can assist with the planning and sponsorship arrangements.

It is recommended one computer be quarantined for the running of training sessions, to enable the full range of sport information resources being promoted to be demonstrated.

The statistics collected, and observations listed will assist future Internet Café providers with their preparations.

The Common Fantasy of Sports News Casting

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As a myth that can be captured immediately, sport reinforces social bonds, affirms the sense of belonging to a community and *"mobilises identifications more than ever before"*, according to the formula used by G. Vigarello.[1] Mainly because, in its capacity as an indispensable source for an aesthetic experience, it is deeply rooted in mass culture. Sport is thus defined as a component of the collective memory, maintaining an obvious relationship to the world and drawing deep out of reality world signs that can be described as excessive and are endowed with absolute clarity.

Learning about life includes remembering some events that really occurred, or even more, calling to mind "screen memories" drawn from the stock of historical "sports pictures". For the older generation, the idea of the 1936 Games in Berlin conjure up the striking images of Owens's victory and also usher in some bleaker representations. The images of the 1972 Munich Games are remembered as the end of the Olympic truce. Finally, in the past few decades, on the occasion of all major sports events, the media offer a retrospective of the best pictures and we can decide which of the pictures submitted "should become something worth remembering". For example, did Cathy Freeman's victory - which received extensive media coverage - contribute to the rehabilitation of the Australian Aborigines ? Is the image provided of the Black American athletes a true reflection of the status of that community in American society ?

The media thus capture an event from history and take on the role of an operator of memory. After a century of sports, we keep in mind only episodes filled with symbolic value. The images offered are so clear, so brilliant that they unwittingly create an atmosphere of doubt : did this really happen or is it not just some transfiguration elaborated by my mind ? The image is paramount and the public will give preference to it to find support. If sport is a fantasy, sportsmen are its personae and the media are a pole in a triangular relationship also including a phenomenon and a public, as we now propose to discuss in this paper.

1. Sports, memory or history of the world ?

Due to the ostentatious criteria conveyed, sport is basically an unquestionable and unquestioned phenomenon as it is not prepared to show patience and runs against the smooth development of nature; as a consequence, it is self-justifying. From this point of view, it has a universal dimension, which endows it with a powerful capacity for edifying representations. In this respect, its international dimension depends primarily on a dynamic movement: the pace imposed on it by the strategies applied by the media that also carry the rising values of a society in perpetual quest of stability and identity, thus enabling it to cope with its inner contradictions. Two of these contradictions seem to be typical of the representation crisis that the world of sport currently experiences.

The first contradiction assumes the form of a widening gap between, on the one hand, the influential spheres with representatives of the political and economic, and also sports world, and, on the other hand, social and cultural expectations. In the case examined here, it pinpoints the timorousness which

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[1] *Passion sport. Histoire d'une culture.* Paris, Textuel, 2000.

has paralysed for a long time powerful institutions such as the IOC or FIFA when facing the glitches of modern times. The sophistication of doping, violence, the irrationality of economic interests, etc., until recent times, were swept under a dark shroud stigmatising the "*silence covering up social and historical facts*" as denounced by the philosopher J. Baudrillard. The historian I. Veyrat-Masson enhances the opposition between history (composed of plain and tangible facts) and collective memory. According to her remarks, the former runs against oblivion (history can be publicised, taught and it can be legitimised), whereas the latter works in terms of oblivion (referring to the concealed, the intimate, the deep feeling that are beyond description). She adds: "*memory clings to specific places,* [it] *is weakened by this structural dependence (if those sites are destroyed or removed, the memory disappears....*" [2]

The second contradiction entails comparing two worlds that are closely related to each other by strategic agreements but still distinct by their intrinsic organisation. On the one hand, the social universe is compared with a tangible stage at the centre of which the real actor is torn by the dilemma he/she faces, having a role to play and a ritual to respect. The latter imposes "*taboos that are necessary for the structuring of social order. A kind of order conceived as a factor to bring harmony between the members of society.*" [3] On the other hand, the mass media that, in J Bourdon's words, are altogether "*a technology, an organisation, contents and an audience.*" [4] The quest for space and time by the media involves good control of complex networks. The global scope of live broadcasting is a way to sublimate sports events. Considering that television is often regarded as the medium offering a sequence of snapshots (actual images), it also contributes to the elaboration of collective memory, thus risking to create it subjectively.

In other words, society decides about the way it will "call for attention" and, *via* the media, sets its own standard of belief in relation to the age and its potentialities. Who remembers, for example, that one of the events of the Olympic Games from 1912 to 1948 was works of art (painting, sculpture, literature, architecture, music) inspired by sport. N. Gueorgiev, the historian of the IOC Olympic Studies Centre provided the following laconic explanation for their disappearance : "*art has disappeared because the verdict was only subjective….*" [5] This can be opposed to pure performance that can be measured and quantified. The short-lived presence of art as a component for the definition of the Olympic ideal was undoubtedly regarded as the signal of the emerging modern world and a way to make preparations to weather forthcoming painful periods. Though art is not always an explanation of life, it uncovers it by providing an incomplete representation of history.

Admittedly, the media are currently in charge of providing a representation of events in its technological dimension. Their role is primarily to neutralise the specificity of beliefs and to promote an amalgamation of them, which is a condition for the emergence of an all-inclusive ideology. In more specific terms, the image become a metaphor of the expectations of society : a display of energy, performances and a sense of personal initiative - as values that are often lacking in society. The drudgery of daily life, the dysfunctions of social life appearing on several levels (racism, exclusion, equal opportunity, the low rate of female representation as decision-makers[6], etc) produce mechanical answers provided in the form of images in which designated minorities win glorious victories. The position of disabled athletes, the non-whites, the disciplines for sportswomen and recently, the athletes making no secret of their sexual orientation are given pride of place in the media. Only overt

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[2] I. Veyrat-Masson (1990) – *Entre mémoire et histoire. La seconde guerre mondiale à la télévision* - in Hermès, n° 8 9, p. 152.

[3] M. De Certeau (1990) - *L'invention du quotidien. L'art de faire,* Paris, Folio, Gallimard.

[4] J. Bourdon, (2000) - *Introduction aux médias* – Paris. Montchrétien, p. 7.

[5] *Courrier International*, n° 514 07 - September 13, 2000.

[6] The increasing number of sportswomen - they represented 42% of the athletes in Sydney - should be attributed to the general policy conducted by Juan Antonio Samaranch, the President of the IOC.

statements about political preferences are still perceived as a representation of violence in the wake of the dramatic episode of "the black gloves" in Mexico City in 1968. The athlete is now at the core of the debate (neither right nor left wing) as the media drive him/her to the centre of the image, as there is no other place for a representation of existence.

The way the media cover sport events does not contradict the rules of social life, but it underscores them by representing exacerbated values as if they were moral tenets (achievement as a reward for effort and hard work, the "nothing is impossible" myth…). As a matter of fact, if we consider "*sport in general as an ideological system for an interpretation of reality - in short a fantasy regulating the relationship of man to their conditions of existence*" [7], then media coverage provides a bond tying up the collective imaginary to the movements of the world. Relationships between individuals are fine-tuned in a quest for stabilisation and the establishment of an egalitarian Utopia. The sociologist E. Morin assumes that "*individuals produce a society which produces them.*" [8]

2. Sport as a transfiguration of the world ?

There is therefore a global image of sport circulated by the media coverage provided of ceremonies that bring people together (the Olympic Games, Football World Cup, Formula 1 Grand Prix, etc.) and offer an image of consistency that stands in contrast to the main characteristic of the material world we live in. Consequently, the image of sport is clearly an operator contributing to social balance and, at the same time, supplies ambiguous reflections of the world disorder. As compared to the original assumption, sports information should be interpreted rather as an identification shift conveying an enlarged representation fraught with unifying values hopefully standing apart from a more complex reality.

Sport as a cultural phenomenon has burst into a kind of disproportionate representation of society as a show; G. Debord writes: "*the show is basically an uncontrolled expression of the media.*" [9] Contrary to other devices aiming at constraining reality (reports, documentary films, etc.), sport calls for spectacular images, and the sport events comply with the rules imposed on images which are based, on the one hand, on a sophisticated and expensive technological arsenal submitted to constant R&D actions (live-broadcasting, light-weight cameras, the Slow Motion Picture technique)[10], and, on the other hand, is meant for world-wide broadcasting.[11] It captures the light and encapsulates emotions. In other terms, the image imposes itself on the sports event, and television "*is established as a condition of existence (...), and is partly responsible for the evolution of sport* [...]. *Some disciplines, which are not so well suited for media coverage, are threatened with extinction unless they adapt to the framework imposed by the IOC. Televisions urge them to improve their attractiveness for TV viewers.*" [12] On the occasion of the latest Sydney Games, such disciplines as beach-

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[7] Diana J.-F. (2000c) – *Les lieux de pratique et de représentation du football* – in Sport, Les lieux du Sport. ADEPS, Ministère de la Communauté Française, Bruxelles, p. 29.

[8] *Sociologie -*. Paris, Fayard, 1984, p. 184.

[9] *Commentaires sur la Société du spectacle*, Paris, Gallimard, 1979.

[10] "Live slow motion" working at the rate of 75 frames per second in Europe and 90 frames per second in the USA. The Higher Definition is used for the image apparently for economic reasons.

[11] The 37 billion TV viewers watching TV for the 1998 World Cup in France. In the USA, the audience for the Sydney Olympic Games was disappointing whereas the NBC Channel "*was paying [over 5 trillion French francs] for broadcast rights to the Games*" (*L'Equipe Magazine* of 7 October 2000). As for the Canal+ channel, they had promised "*36 hours [*broadcast*] a day (including 24 hours a day on the Canal vert channel)*", (*Libération,* September 17, 2000).

[12] Diana J.-F. (2000a) – *Les enjeux du ralenti dans la représentation télévisuelle du football. Entre inquisition et réquisition* – in Montrer le Sport (dir. L. Veray et P. Simonet), Paris, Les Cahiers de l'INSEP, p. 258. See also the papers by F.Potet (*Le Monde* of 06-07 Dec. 1998)

volleyball and taekwondo were staged for the first time and others were opened up to female athletes (water polo, pole-vault, triathlon, etc).

In an attempt at "being everywhere at the same time", the media try to meet the requirements set by such influential organisations as the IOC whose legitimate objective is to maintain an international signal that would be valid for the whole world and to meet the alleged expectations of the public at large.

Consequently, we have to accept that the public does not really have the possibility of stepping back to take a critical stance and reach a rational and clear-cut opinion on the basis of common images, independently of their actual competence ? It is then similarly difficult to make a clear partition between the fiction and facts as they are contained in the images submitted.

It still holds true that, in the specific area of sports, expert advice is expected and this expertise is often based on a perception of images which tends to impose an over-estimation of the reality of the event. For that matter, the illusion conjured up by the media dimension prevailing in sport imposes a specific moral code on all actors concerned (sports federations, athletes, media and public). As a matter of fact, the image of sport in particular calls for the social action of evaluation reassures all participants by confirming that they are members of the TV viewers community. "*Joining the group gives the illusion of having a share of the image of sport, and therefore appropriating it following a natural process.*" [13] The intrinsic performance of an athlete, however extraordinary it might be, gains immediacy the very moment it is submitted in the form of an image processed by the media. Everybody can then express a final opinion about complex issues such as doping, the training of an athlete, etc.

As we suggested above, sport bursts out of its own framework and, at the same time, assumes a dramatic dimension in the universe of ordinary life and permeates various public spheres (politics, economy and the entertainment industry). Ordinary conversations find support in media reports[14] and strengthen solid convictions about events that have been unconsciously stripped of their complex and subtle aspects : what does running so fast or jumping so high or having a perfect posture or train actually mean ?[15] The point is first **to see** and **to talk**. The very idea of **doing** is being driven to the background and superseded by the public as it is busy constructing its own representation of sport. Television captured the specific importance of the sporting phenomenon that can then be made autonomous - or even transfigured - in real time. Consequently, sport in the media imposes itself by mutation and transaction processes up to the point of laying claim to a specific status. Forms of manipulation such as slow motion, for instance, have made a contribution to the reconsidering and updating of sport via images.

By concealing - metaphorically - space and time, the image thus suggests participating observation. This specificity of sport information is based on a framework which, according to D. Dayan, provides a clearer indication of the concept of public and "*refers to the identity of the other members of the public whose*

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[13] Diana J.-F. (2000a) – *Les enjeux du ralenti dans la représentation télévisuelle du football. Entre inquisition et réquisition* – in, Montrer le Sport (dir. L. Veray et P. Simonet), Paris, Les Cahiers de l'INSEP, p.262.

[14] Let us mention just one example: 190 and 609 TV reports and editorials were devoted to Marie-José Perec surreptitiously leaving the Sydney Games.

[15] Expertise is in great demand. On the TF1.fr Website, the "Jeu de l'entraîneur" game puts everyone's competence to the test and induces them to participate. During the South Africa vs. France game on 7 Oct. 2000, the commentator urges TV viewers at regular intervals to play, saying the "Jeu de l'entraîneur" game is a great success, and you are more and more numerous - we are now 150,000 trainers - as it is so easy to become a trainer. Professional trainers will probably disagree…

presence is used as a foil for the performance of participants or the experience that TV viewers keep in mind." [16] Hence, this heterogeneous practice contributes to the structuring of the TV viewer's identity who is used to the modes applied to shaping and fashioning reality.[17] Moreover, the dramatic media coverage reshapes an event into an experience of collective sharing that can be accepted by a majority of people without involving one's responsibility Consequently, the quest of the public is turning neither to reality nor to truth, but rather to a reconstruction of reality linked to an idealised world.

3. Sports as a fantastic representation of the world ?

The exceptional process of sports media coverage leaves the public in an unstable position. This position swings between two complementary poles : externality - as a way to step back from the reality of the event (**just being-there**) - and, at the same time - internality - the illusion of participating (**being-with**). For sport just as for any human activity, the public faces two obstacles that impair their understanding of the world - its complexity and opacity. They can decide to overcome them or not; in all cases, the media will take upon themselves the task of renegotiating these barriers for them.[18]

The TV viewer generates primarily a fictional bond with the image of sport. This refers to this cliché formula about the illusion of reality, *"well; I know ... But still"* is at the core of the tension caused by the symbolic system of the image of sport which does not have any specific direction per se, *"but only for those who know how* [it] *is to be interpreted in relation to what* [it represents]…"[19]. In other words, the point about sport information would be not so much what the image makes of the TV viewer, but rather what the TV viewer fabricates on the basis of the image. We can suggest that this already looks like a fantastic image ! All the more so as television claims that we are at the same time **here** (as social actors with our ritual constraints), **there** (as convinced members convinced of a community sharing identical values), and, undoubtedly, **elsewhere** (being excluded from certain spheres exerting influences that are dubious because they are mysterious).

Initially, the strong imaginary and dependent relation that the public entertains with both television as an object and sports adulterate the principle of reality. Then, taken as a form of culture because it refers to the living society and as a show as it depends on the constraints of representation, sports clearly appear as what television offers as most accomplished, both from the point of view of a technological achievement and concerning the effectiveness of the values conveyed. We must therefore admit that it has the capacity of creating an aesthetic object from the very material of reality, which is thus marked with a deep imprint.

However, as it is rather foolhardy to make such a strong-headed statement about the specific way the media have to describe the sports events, let us be content with emphasising, as illustrated with the examples below, the obvious influence that audio-visual technology has on sport as such and its necessary evolution. TV has, for example, initiated specific rules such as the tiebreak for tennis, the

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[16] Dayan D. (1998) – *Le double corps du spectateur*. In Penser la télévision (dir. F. Jost & J. Bourdon), Paris, INA/Nathan, p. 242.

[17] Irritated by the gap between reality and representation, the journalist Mathieu Lindon called his report at the time of the Sydney Olympic Games : *Recording broadcast live* (*Libération* of 18 Sept. 2000). As an example, he mentions a commentary in which the reporter, who knows the results of the event, still gives the illusion of a live broadcast (4x100m swimming freestyle broadcast with a short 5-minute lag, which gave the commentator the aura of clairvoyance as if he had known in advance the winner's name and the record performance). This type of behaviour is now common and has become standard practice in the media world.

[18] Charaudeau P.(1997) – *Le discours d'information médiatique. La construction du miroir social.* Paris, Nathan/INA, p. 31-33.

[19] Sapir E. (1971) - *Anthropologie*, Points Seuils, p. 50.

two-hour limit for the Formula One Grand Prix, the golden goal in soccer, etc. In the same way, some systematic devices such as live broadcast or slow motion remind us that all events exist primarily through the device representing them; the event is structured in such a way as to check on the unpredictable. This unpredictability gives a dramatic dimension to the event, creating "*an illusion of immediacy and transparency.*" [20] The media orchestra, as it were, seems to take the lead in the event. This idea should be related to the concept of a script developed by cognitive sciences according to which commonplace ideas tend to be raised to the status of full-blown structures before the text proper emerges. This impression was amply confirmed by the first statement made by the Brazilian footballer Leonardo at the end of the World Cup in France: "*the scenario is perfect for the French people*". The crowd stormed the Champs Elysées, the fronts of historical monuments were floodlit with giant images of the heroes' faces, people celebrated joyfully and swayed symbols of victorious France. And that is basically the image, which **endures** in people's minds. Being served by images that announced the result, Cathy Freema's victory can be accounted for along the same lines. Interestingly, these two sports highlights occurred in their native countries and both nations profited from the positive resonance of the performance: multiracial France is on its way to a bright future and progress, tolerant Australia is prepared to accept its troubled past. In that respect, the media create an ideological framework for space and time and it is quite difficult to exist out of it.

On the basis of a strategic agreement based on the obvious interest of the media institutions and the desire of the public (anticipation, comprehension, frame of social expectancy, etc), everybody takes care of their own public image. Sports take advantage of the far-reaching social resonance offered by television which, reciprocally, benefits from the prestigious image of the sport disciplines.

In other words, the media "*enhances more* [that it] *than it informs*", and takes sports events rather as something fit for media coverage rather than actually covering them. Television can indeed be characterised as a reflexive discourse whose reference is television itself. The sportsman/woman accepts to contribute to the construction of this reference as he/she exists through the permanence of the representation of his/her physical body and is legitimised through it. The athlete is intrinsically an efficient individual, well adjusted to his time due to the "ideal of modernity" that he symbolises and by his/her being an actor in a dynamic network. The main consequence is to encourage freedom of movement; however, a contrario, we observe that the identity of most of the actors concerned is gradually obliterated and, at the same time, their images are enhanced: the powerful federation, the journalist-cum-star, the protected public, etc.

The specific figure of the sportsman, at the same time a popular and legendary hero, and a dramatic character, has the dual task of "*acting and representing what is in motion to bring out the unveiling of the truths hidden deep in all human activities.*" [21]

The professional sportsman/woman is thus dependent on his/her ability to control media space and, at the same time, to vest a role that can be easily identified by the TV viewer. This role is primarily that of a winner maintained within a framework. This is the reason why so many athletes decide to become expatriates. A recent study has shown that "*the international federation itself has registered no less than forty applications for a change of citizenship in the last ten months.*" [22] Concerning Germany, the Council of Europe expressed concern after observing that "*the abolition of the condition of nationality has caused a dramatic increase*

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[20] Lochard G. et Soulages J.-C. (1998) – *La communication télévisuelle* – Paris, Armand Colin, p. 146.

[21] Balandier G. (1992) - *Le pouvoir sur scène*, Paris, Balland, p. 14.

[22] *Courrier International*, n° 515 of September 14-20, 2000. Among the most famous cases of expatriates, we could mention Wilson Kipketer, a Dane of Kenyan origin or Eunice Barber, a Frenchwoman from Sierra Leone.

in the percentage of foreign sportsmen in the rich clubs taking part in the high-level championships." [23] Professional football-players are increasingly mobile and move sometimes from a club to another during the same season due to the development of the winter "mercato". A typical example is provided by Marie-José Pérec selecting private trainers rather than nationals (John Smith, a Californian and Wolfgang Meier, a former GDR citizen). To give support to this new distribution of roles, the European Commission in Brussels recalls "*the four basic freedoms laid down in the Treaty of Rome: freedom of movement for goods, capital stock, people and workers.*" [24] The paradigm of the United States is thus taken as a reference model for which the sportsmen, like public idols, are entered in the "entertainer category", just like actors and singers.[25]

In fact, the media image that sportsmen/women aim to impose is both one of distinction (a person privileged by nature and due to his/her image) and one of conformity (subject to common rules).[26]

Admittedly the image of sport has by far surpassed national stakes. It symbolises "*an era when cross-border communication is ubiquitous [when] the international dimension becomes a must*".[27] The media image or even the very existence of a given sports discipline and its actors is increasingly dependent on the main channels for the circulation of information.

The image of sport is rich but also complex (each sports image contains the history of the image of the sport), saturated but also abstract (the basic principle is to create excessiveness). As it carries for many observers a symbolic expression of violence, it is regarded as an overall image bordering on self-sufficiency in the sense that it gives the illusion of existing for itself, independently of the event which it captures. Humility is definitely not the main feature of the image of sport.

The image is ambiguous because it simultaneously offers evidence of conflicting values. The selfsame image will thus raise ethical questions referring at the same time to concepts related to Good and Evil, Justice and Injustice. The image of sport offers the possibility of seeking refuge in universal values, compliant with the social practice associated to the cultural code of the "standard mode of belief". This mode obliterates all elaboration and restructuring processes. The image appears as a normal and natural vision, which is an essential condition for pleasure. This normality is itself related to the Western form of domination consisting of developing a centre as a space where decisions are made and desire is roused. We can indeed see that sportsmen/women become an object of worship and immense interest. In broader terms, the ritualised encounter elicited by both TV as an institution and the public expresses the way in which the TV image of sport addresses issues related to daily life and assesses why experience of sport (I mean here solely as a TV viewer) accounts for such a large share of ordinary conversations.

As TV images have trained us to a specific watching mode, they have come to impose their own concept of sport, and, in a broader sense, they generate a product of their own to shape the world by the influence that they exert on the construction of social representations. This does not mean that experiencing "moments of truth" is now out of the question. Such moments occur unexpectedly. The absence of an image becomes a specific feature of reality.

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[23] Meeting of 30 September 2000.

[24] Campbell D.- *International Courier,* n° 515 of September 14-20, 2000.

[25] *L'Equipe Magazine* (supplement to a weekly paper) of January 29, 2000.

[26] An assumption that we developed in a recent paper dealing with Formula One pilots (2000b).

[27] Mattelart A. (1992) - *La Communication-Monde.* Histoire des idées et des stratégies, Paris, La Découverte/Poche. p. 6 & 298.

In this respect, the image of sport offers not so much less legible actions, but rather a succession of situations that can be made visible and can be validated by a public anxious to capture an event instantly and in its totality. This assumption can be related to M. Augé's remark saying that sport is a "super-modern" phenomenon; this adjective refers to *"the effect resulting from acceleration, excess, satiation* [in terms of wealth of events, images, individual]; *far from abolishing or exceeding modernity* [...], *these effects 'over-specify' it and make it at the same time less readily legible and more open to problems."* [28] This "super-modernity" dimension is out of the reach of most emergent countries and the disciplines having lower profile (not part of the media networks): their ambition is more modestly to illustrate the spirit of the founding father of the Olympic ideal: the utopian idea of "just being there" or the romantic idea of "be-together", to claim a right to exist in the world by recalling that you may be "Just happy to be there." [29]

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[28] Augé M. (1995) – *Sports ; médias, société.* In Sport, n°150.

[29] The title of an editorial analysis published first in *Newsweek,* then again in *International Courier* n° 516 of September 21-27, 2000. *The Palestinian team's two athletes have a flag and an anthem but no country - under Olympic Committee rules, Palestine is a 'self-rule' area.*

Sport Ethics, Journalistic Ethics
S22

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"Journalists like academics are responsible and must answer for the concept of sport which we defend." (Jacques Marchand 1993, Université d'été Lille 1993)

Several phenomena seem to have played a crucial role in the resurgence of the ethical and deontological debate of the sports media. The profound malaise is above all due to circumstances; it is the result of the recurrent reproaches levelled at the press, which permanently undermine the nature of the relationships between sport, the media and the economic world. These frequent reproaches are based, firstly on the domination of financial considerations and secondly on the denunciation of the power which television is said to exert over the world of sport.

These subjects are raised in moments of crisis such as when a doping scandal is uncovered, when corruption raises its head or when abuses occur, resulting from the signing of exclusive rights. This ethical and deontological debate also has structural explanations. It is above all the consequence of the journalist's own interrogations in the face of the evolution of their trade. Access to sports events is today limited, regimented by the increasing weight of commercial considerations.

Freedom of action is subordinate to economic constraints. Exclusive rights, the structuring of press conferences and interviews, the urgency of the work have led to dispossessing journalists of an object that, historically, it has been their job to construct. This structural visibility also concerns the current consideration of the sporting object. Traditional values, seen as the guarantee of sporting morality (equal opportunities and unequal results, universality, and the meritocracy of performance, etc.)

Is this current state of affairs a real expression of a new journalistic morality accompanied by a deviance of sport ?

It is impossible to ignore the evolution of journalistic and sports practices. At the same time, in order to carry out a reflection on the ethics of sport and journalism it is necessary to put our study into a historical context. The example of amateurism, held up for almost a century as a model of the morality of sport, is becoming obsolete, regarding the financial stakes in sport today. Was not the amateur and bourgeois Olympic Movement opposed to professional, and grass roots cycling ? At the same time, at the beginning of the century, different cycling journals provoked, favorised, integrated the triangle of the sports economy through the association of a media, a sport event and the economic sector. Not only did the written press create the event instead of waiting for it to happen, but it also gave the events exposure through reports, in fact it gave life to these activities because it, the written press, depended on them. The attention given to the genesis of this "sport and media" association must lead us to question the real reasons behind the fact that these deviant practices are currently being brought under the spotlight.

Are there not new forms of sports and journalistic deviance guided by the principles of competition and connivance ? Can one respect these respective codes in a relationship of connivance, of complicity in which one is judge and judged at one and the same time ? If the current point of view is legitimate, is the reflection identical for the media which have the rights to events ?

During our different meetings exploratory conversations took place, which made it possible to define two potential axes, for our study, on two levels or orders. Firstly that of realities and secondly that of values. Naturally and spontaneously it was the first of the two which was dominant; indeed the urgency of a reflection concerning the confusions and the excesses, which are more and more frequent and contagious, was underlined by those persons working in the media.

1.1.   In the order of realities

The first stumbling block is a clear realisation of the fact that, specifically in the world of sport, mass media is or can be, at one and the same time, to differing degrees:

– organiser of the event
– broadcaster of the event
– partner (partial or total) of the event
– media reporting the event

In this type of relation the media has a common interest with the event organiser; they complement each other. Victory is good for business, increases the number of spectators, and encourages the sale of newspapers. The main aim of the media is to valorise the events and the actors, to publicise (Wille, 2000) in multiple forms rather than to inform. It is important to remember however that this confusion of roles is not new. From the beginning of the century, it is the journalists who have created and directed the modern sports movement. At the same time, at the beginning of the twentieth century, when a great number of new titles were created, the sport press was characterised by numerous conflicts and oppositions. A century later we find the logic of competition linked to a rising demand for a limited offer of major events. After a period during which the journalist was automatically admitted into the stadium, economic considerations have led to the birth of exclusive rights, which govern access to live events in a different way and modify journalistic practice, which raises several questions.

– **Rules of independence of journalism**
  What is the practice, what is the speech, and what are the possibilities, the accepted rules when the media is both "judge and judged" ? Is it necessary to have an accommodating attitude to access information ? In this case we must also question the attitude of the sporting world, which regulates the access to information not only because of a question of rights but also for personal reasons. It is not unusual for a sportsman or woman to boycott a journalist or a media following an unfavourable report for example. In a general way, this also raises the question of the rights of access of journalists who are not the holders of these rights at sports events, to the direct sources – the athletes, these aspects are the responsibility of the sports world.

– **A diversity of practices**
  It is impossible not to take into account the heterogeneous nature of the different types of relations which associate sport and media. This diversity of approach corresponds more to reality, taking into consideration the complexity and the diversity of journalistic practices, if one only thinks of the plurality of the media and of sports practices. Is commentating on hours of ice-skating, or of cycling, or seeing a live match the professional equivalent of giving a report thereof on the main evening news bulletin ? At the same time we are witnessing a diversification of the sources of "live" information, according to the number of agents which has been increasing since the birth of "live" coverage, according to the location of reporting (sitting in a cabin or on the field), according to

status (journalist, consultant), according to function (taking care of the flow, investigation, interviews, historical reference). Does the journalist wearing a suit and tie "in the show" have the same function as on the evening news programme ? Is one a sports journalist, a sporting journalist or even a journalist in sport ?

– **The objective complicity between the media and the sports movement**
Professional legitimacy often generates a feeling of belonging to the "Family of sport". This objective interest in the success of champions, the dynamic of victory; the policy of "the show must go on", set aside images or realities that hurt, or which would create disorder. Is there a "law of silence" in operation here? This connivance necessary to access information raises the question of the status of this information.

– **The influence of new techniques on professional practice**
How does the use of the Internet modify the way journalists work, their relationships with their sources; how does the public unite and divide itself with technology? The Internet offers sport a considerable advantage. The Internet makes it possible, 24 hours a day, to diversify the modes of direct access to information. It can also solve a difficult contradiction for the other media that of the widening of the audience, often incompatible with a wider targeting of publics.

1.2. On the question of values

Taking into account the symmetry of sporting and journalistic behaviour, the secondary lines of work could deal with:

– **The universal aspect of the values of sports ethics**
Tolerance, accepting differences, team spirit, the equality of rules, encouragement of effort, valorising health, feeling good in one's body, etc.

– **The democratic aspect of the values of ethics of the media**
Information which liberates the equal opportunities, the ardent obligation of truth, necessary and justified investigation, civil rights.

– **Meeting between the two sets of values, in agreement or opposition**
Incomprehension of points of view, the free or paying opposition, or public interest versus general interest. At the same time, is the logic of chance which is based on the uncertainty of the result compatible with the logic of the stake ? The logic of enterprise concerns not only the financial partners of the sporting event but also the media industry.

2. A new responsibility to be defined

Sport has ambiguous and contradictory relations with social reality. Simultaneously it is situated outside of this reality, sport is in effect policed by its own set of rules, in specific places, but at the same time sport is a very widespread social practice and the successive transformations of sports have provoked several types of analysis by sociologists and historians (Defrance 1995).

2.1.1. Sport, a separate world

Sport is a social practice based on the game principle, which takes place in a given location at a given time. The stadium, the gymnasium, the swimming pool are places which are isolated from the rest of social space. During competition, the action, the gesture, the behaviour seem to have no consequence for the outside world. But according to critical works (Freudian-Marxist), sport fulfils a role in the reduction of social tension. Jean-Marie Brohm (1976), for example, calls into question the mass culture and the alienation of the working classes by the sports "Show business" industry. In fact, in countries like France, even at the time of proletarian sport and the Olympic Games of the workers (1920-1936), socialist and communist political militants were wary of all types of sport, which seemed to distract workers from the real question.

But sport is not only a game, an action, a domination of an other or of oneself, it is also a spectacle or show. Vigarello (1988) reminds us that in the 17th century, *"the show consisted of maintaining and exhibiting the hierarchies of cast. The spectator having to observe the confirmation of the order, leading to tests and techniques often arranged to highlight this order. During this epoch sport was often the expression of elegance. Aesthetics was more important than force. With traditional popular practices, spectators often being mixed, put the emphasis on action rather than the visual representation".* According to Vigarello once more, one of the ruptures between traditional popular practices and the sports which prolong them was at the end of the 19th century, that of the show. The actions were arranged to be seen, places rethought and reorganised for better viewing (tracks, pitches, courts, etc). At the time a transformation was witnessed from practices in a natural environment to those in a stadium thanks to the organising of space and time, to the creation of stadiums facilitating the flow of spectators and crowd management. The basis of this relationship between sport and social reality can be found in the Olympic Movement. Vigarello tells us that at the time of the very first sports shows or spectacles a particular ideology appeared. The visionaries of the end of the 19th century won the day and Coubertin was taken over by a will to build, to create an exhibition of exemplary behaviours, to put the spotlight on symbols.

A theatralisation of a secular morality took place with at times an explicit recourse to religious references. *"The first essential characteristic of the modern Olympic Movement is to be a religion"* (De Coubertin P, 1935). Moreover the Olympic Movement of Pierre de Coubertin expresses another dimension, it is the emergence of a sporting practice which has to be disconnected from social reality. On the one hand by putting the accent on the imaginary, on the other by freeing sport of all links to money and politics. In this way the role of the press becomes paradoxical. It was with the means of communication of the time that Coubertin was able to promote his Olympic idea, based originally on a humanist dimension, with added spiritual concepts, separated from all links to money. But the valorising of performance and the links that the press had established with the industrial world contributed to giving sport liberal economic values.

2.1.2. Sport, a reflection of society

But this supposed distance is incongruous according to the works of Bourdieu (1994) which made it possible to develop a socio-cultural approach to the practice thus showing that sport is not without links to social reality. For Michel Bernard (1985), sport entertainment is not the representation of a single story of real or made-up events, the simulation of past or imaginary conflict, prepared and elaborated simulation to satisfy curiosity and if possible, to provoke emotions. It is on the contrary the

present reality, which is exhibited; that of an inter-group confrontation, which is both universally and rigorously coded, controlled and judged. In fact all competition offers itself to the viewer as both a real and ritual practice.

Sport is the theatre of living spectacle, it stimulates emotions as Ehrenberg (1991) points out and acts as an emotional catalyst, the sporting spectacle increases the possibility to experience emotions and authorises one to lose oneself therein. Today, champions full of symbols play out the highs and the lows of the ordinary individual. But at the same time Patrick Charaudeau (1997) points out that: *"the media does not broadcast what happens in social reality, it imposes what it constructs in the public space".*

2.2. The social role of the sport journalist

Sport, which is made into a spectacle or show, is mediatized and generates audiences, must also be understood for its effects at the heart of the public space. J. Habermas (1962) analyses the process during which the audience made up of individuals using their reasoning takes over the public space which is controlled by authority and transforms it into a sphere where criticism is exercised against the power of the state.

What role does mediatized sports entertainment play in the public place ? What is, in this case the social role of the sport journalist ?

Two schools can be identified concerning the new social responsibility of the media and journalists (Watine, 1998). On the one hand it is considered that the press has always had an essential role to play in the functioning of democracy and its main institutions. On the other hand, it is believed that recent events confirm the hypothesis according to which the media has a new civic role to play and that it is its responsibility to act in a much more concrete way within its environment even at times to cross the "red line" between the concept of the journalist as witness and that of the journalist as actor. The media in this case can no longer limit itself to be a passive witness and therefore an accomplice to the "dysfunctions" of society. Concerning sport in particular, the evolution of practices, professional restrictions generated by a dominating economic logic, could favorise a pluralistic journalistic treatment of sport. Connivance and leniency would be replaced by a critical eye acting as an opposition force to mediatized sports entertainment.

3. Conclusion

At the end of meetings, which brought together media professionals in the sports domain and academics, it emerged that circumstantial and structural phenomena have led to the birth of an ethical debate on journalistic and sports practices. But at the same time, if this observation results above all from a reaction on the part of journalists faced with the evolution of their professional practices, it is important not to forget to recontextualize the genesis of the sport-media relationships. It is built on a principle of reciprocity while the current apparent difficulties arise above all from a logic of connivance and competition.

Does the freedom of the press and the obligation to inform stop at the entrance to a stadium ? Would not then, the sport media gain in credibility, playing its civil role, in so far as it would be able to propose a plurality of points of view ?

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Simulating Sport in Virtual Arenas
S22

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1. Introduction: Convergence and immersion

The notion of convergence on the electronic super-highway has been suggested for some years now to describe the inevitable merging of various information facilities, including home computing, television, radio, telephone, email, and so on (Stoddart, 1997). Yet, convergence reflects only the technological change rather than the change to human experience and is only one metaphor that describes a much broader process that is taking in cyberspace. If one considers two central agents within the production of sporting events, the spectator and the athlete, one can observe two dichotomising tendencies in the context of new technologies. The spectator's experience seems increasingly to tend towards greater **immersion** and refers to a sense of being **within** a virtual experience, rather than outside of it. Yet, it is not clear whether this new immersing environment for the remote-spectator is necessarily a substitute for "being there". Alternatively, the athlete's experience within sport tends towards an **abstraction** from the sporting environment that appears to be concurrent with the rationale of performance-based. Yet, neither of these tendencies is beyond ethical scrutiny and evaluation.

2. Understanding Virtual Reality (VR)

Hemphill (1995) makes the important point that virtual reality (VR) is no novelty in contemporary society. More familiar and, perhaps, less obvious examples of its use are of *"documents, phonographs, radios and television"* (p.56). However, it can be argued that virtual realities are approaching a change in kind rather than degree or at least, that the degree of change in virtual reality technology is becoming increasingly profound. Moreover, VR is most interesting for it represents the paradigmatic technology that will make real all the claims for computer technology being a truly liberating environment.

Of course, VR technology itself has yet to fulfil the promise of the science-fiction writers. However, this is no reason to doubt its prospect. The more imaginative ideas about VR describing humans with full or part-bodied electronic suits that allow a person to **feel** as though they are moving in a computer-simulated world, all brightly coloured and digitally constructed would, undoubtedly, be appealing for escapism they offer and for the play-factor. However, implicative of these ideas is their altering effect upon human experiences, including sport. For Hemphill (1995) the "revisioning" opportunities of VR for sports are many and describe circumstances that would affect the athlete's as well as the spectator's experiences of sport.

3. Immersion: Spectator experiences

Hemphill (1995) describes how spectators that would enable total immersion spectating could wear VR head-cameras where the spectator could experience the performance of the athlete as if performing for him/herself. Less radically, greater interactivity between the spectator and the event would allow the spectator to direct the performance that he/she observes, choosing camera angles, zoom, and replay. Such technologies suggest that the spectator's experience tends towards total immersion rather than increased passivity. This is not to suggest that the spectator is becoming more active during their

spectator experiences. Rather, it is argue spectators as becoming more integral to the context underpinning the events and being increasingly proactive in creating the networks related to their interests. Already, the volume of electronic newsgroups related to sports clubs is vast. On a separate level, the opportunity to become part of the event, whilst being at a remote site, are further methods by which the spectator is gaining a degree of agency within mega-sports.

4. Abstraction: The athlete's (tele)presence

In contrast to the spectator, it could be argued that the new virtual technologies provoke circumstances that make redundant the need for sports arenas. Highly sophisticated ergometers could replicate the competition environments and digital broadcasting could construct the arena for the viewer. Thus, we might envisage cyclists within a cycling booth, sitting on a real bicycle, not too different from high-tech exercise bicycles, but the viewer sees the athlete cycling in a fictional but impressive terrain. The input of the cyclist's efforts is digitized for the athlete and viewer, thus giving a representation of how well the athlete is doing. Again, similar to current technology, this can be placed alongside similar data belonging to other athletes in the race. A similar construction can be achieved with other activities, such as sprinting, jumping, and throwing.

For each of these sports, the technology exists in varying capacities and promises to become far greater. Already, virtual reality is even being used as a training mechanism for elite competition. The US Bobsled team utilised a simulation environment to allow their team to experience the track they would face at the Nagano Winter Olympics in 1998 (Huffman & Hubbard, 1996). Where remote viewers increasingly comprise spectators, the purpose of a "real" sporting location becomes nonsensical. If it is possible to construct a realistic simulation, where competition is still taking place, then sport can offer much more to the viewer – new environments that can be constructed to varying degrees of difficulty and imagine and where the competition is still very real.

5. Conclusion: The ethical question

Whether such spectating or competitive experiences are ethical is rather an odd question to phrase. The concept of ethics within leisure is somewhat empty within western society. The freedom to choose a particular leisure experience over any other is seen as a liberating opportunity, rather than a constraint. As such, it is of little use to advocate one spectator experience as being superior or more authentic than another is. Nevertheless, there are some grounds for being able to discuss the consequences of leisure choices and for providing arguments about why a particular kind of experience is of value over, if not, in addition to another. Such an approach to ethics is particularly necessary when a technology appears to be making redundant a particular way of doing something. The approach is not an advocacy of a particular experience, but simply an articulation of its worth. It is a way of arguing why something is worth pursuing, no matter if there are easier opportunities. Such arguments are suggested as necessary in the case of increasingly immersing spectator experiences.

Alternatively, whether it is ethical for competition to become so entirely sanitised of environmental factors that might alter a performance, seems more substantive. It would seem that, to make the competitive environment standardised and reduced to the control of a laboratory to ensure a level playing field is concurrent with sports ethics. However, the conclusion requires a position to be taken on the value of environmental influence in competition and the importance of having to compete outside of an isolated laboratory. If sport is a test of athletes within a public arena, amongst other athletes, that embraces environmental influence as an important way of distinguishing excellence, and

then the importance of an arena is clear. Yet, such ideals must be reconciled with the apparent interest in constructing a playing field that is level – which might only be possible in virtual worlds.

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Bibliometric Analysis in Sport and Physical Education Sciences Background Guidelines and Benefits
S23

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1. Introduction

Bibliometrics is a totality of research methods, and is defined by Keenan and Johnston[1] as the *"use of mathematics and statistical techniques to study communication patterns and publishing in the distribution of information; related to scientometrics. Originally called statistical bibliography"*. There is no need to go into depth and details of these research tools; we want only to mark some of their peculiarities in relation to our study.

This method had already jumped over the boundaries of classical librarianship and has now intruded into artful designs of databases and even into the World Wide Web spaces. Such expansion has given rise to the qualitatively new branch of bibliometrics – informetrics.[2]

Paisley[3] in his very interesting analysis of the past development and future perspectives of bibliometrics made at the end of 1980s, selected *"three generations of phases of bibliometric research, the third lying principally in the future. The first two were marked respectively by text-based measures and citation-based measures. The third will be marked by complementary use of both approaches, combined with an increased use of supplementary measures from nonbibliometric sources"*.

The researcher's prognoses, which received actual corroboration in future practice, pointed out some additional (and new for bibliometrics use) research methods, such as content analysis, coverage analysis, etc. These methods can help to solve one of the main (in our opinion) bibliometric problems on the agenda: to give real statistical verification of development of one or another sphere of knowledge, to transfer and change priorities and research tendencies, as well as to help determine still unexplored problems, focusing the attention of researchers on "blank spaces" on the map of this sphere.

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[1] Keenan S., Johnston C. (2000) - *Concise dictionary of library and information science*. Ed.2. London et al.: Bowker-Saur, p.21.

[2] See, for example: Schrader A.M. (1984) - In *search of a name : information science and its conceptual antecedents*. – Library and information science research, v.6, N3, pp.227-271; King J. 1987) - A *review of bibliometric and other science indicators and their role in research evaluation*. – Journal of information science, v.13, N5, pp.261-276; Tague-Sutcliffe J. (1992) - *An introduction to informetrics*. – Information processing and management, v.28, N1, pp.1-3; Narin F., Olivastro D., Stevens K.A. (1994) - *Bibliometrics / theory, practice, problems*. – Evaluation review, v.18, N1, pp.65-76; Almind T.C., Ingwersen P. (1997) - *Informetric analyses on the World Wide Web : methodological approaches to "Webometrics"*. – Journal of documentation, v.53, N4, pp.404-426; Larson R.R. (1996) - *Bibliometrics of the World Wide Web : an exploratory analysis of the intellectual structure of cyberspace*. – Proceedings of the ASIS annual meeting, v.33, pp.71-78 (Electronic text available also in: *http://sherlock.berkeley.edu/asis96/asis96.html* and *http://www.virtualref.com/ libdocs/8.htm*).

[3] Paisley W. (1990) - *The future of bibliometrics*. In: Scholarly communications and bibliometrics. Ed. by C.L.Borgman. Newbury Park et al.: Sage Publications, p.281.

As in every other scientific tool, with the growth and spread of this approach, it has become more and more complicated, and its theoretical basis – more sophisticated. As a consequence, this has opened the understanding of the results of such analysis, first of all, to professionals in mathematics and statistics, and to a lesser extent to wide professional circles of librarianship and information science. Therefore, we think that the place and use of bibliometric and informetric methods in our profession must become similar to the place and use of diagnostic methods in medicine, where a professionally adequate physician makes all the nessessary and often complicated investigations of a patient and after that explains in a popular form to him or her the results and, if necessary, the required treatment.

Therefore, the tendency of accentuating only one aspect from all the sphere of application of bibliometrics (we mean "communication patterns") seems to be improper. Beyond any doubt, it is very important on many sides (first of all, scientometric)[4] but, as is generally known, every absolutization frequently leads not only to losing sight of many other important aspects of a problem, but can also lead to such psychological phenomena as the gradual lowering of interest in the aspect itself. This can hardly be fruitful for the development of library and information science, or this concrete sphere of knowledge.

One more aspect must be noted. The better part of all biblio- and informetric research is applied to citation analysis, which can be named as one of the basic methods of these communication patterns' studies. It also provides the possibility of determining in one or another scientific field such important characteristics as the dispersion of the research community, the leading centers and individual investigators and their productivity, its demand and value, etc. But sometimes it seems that such keenness in citation analysis is founded first of all on the widespread quality of homo sapiens to ascribe to his own surname the prime value of the entire human lexicon.

Together with this, many researchers may examine the history of one or another scientific journal in the light of the quantitative parameters, revealing the general appropriateness of its development as well as the specificity of its editorial policy.[5]

In addition, we see here the variety of languages (from English, commonly recognized as "world scientific language", to Chinese or Serbo-Croatian), and this is one more challenge for bibliometric research in our domain, since such analyses can help to include national research in the world-wide professional stream.

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[4] The interesting analysis of this aspect can be found, for example, in the special issue of *Communication research – Bibliometric methods for the study of scholarly communication* (separate edition: Scholarly communications and bibliometrics. Ed. by C.L.Borgman. Newbury Park et al.: Sage Publications, (1990): Borgman C.L. (1989) - *Bibliometrics and scholarly communications: editor's introduction.* – Communication research, v.16, N5, pp.583-599; Liewrouw L.A. (1989) - T*he invisible college reconsidered: bibliometrics and the development of scientific communication theory.* – Ibid., pp.615-628; Paisley W. (1989) - *Bibliometrics, scholarly communication, and communication research.* – Ibid., pp.701-717.

[5] See, for example: Stephenson M.S. (1993) - *The Canadian Library Journal, 1981-91 : an analysis.* – Canadian journal of information and library science, v.18, N2, pp.1-18; Haiqi Z. (1995) - *Analysing the research articles published in three periodicals of medical librarianship.* – International information & library review, v.27, N3, pp.237-248; Pressman R., Park S., Funkhouser E. (1996) - *What's in a name? Bibliometric analysis of 40 years of the Journal of Broadcasting (& Electronic Media).* - Journal of broadcasting & electronic media, v.40, N4, pp.511-539; Joice S., Schrader A.M. (1999) - *Twenty years of the Journal of Homosexuality : a bibliometric examination of the first 24 volumes, 1974-1993.* – Journal of homosexuality, v.37, N1, pp.3-4; Koehler W. et al. (2000) - *A profile in statistics of journal articles : fifty years of American Documentation and the Journal of the American Society for Information Science.* – Cybermetrics : international journal of scientometrics, informetrics and bibliometrics, v.4, issue 1, paper 3 (electronic journal, available: *http://www.cindoc.csis.es/cybermetrics/articles/v4i1p3.html*), etc.

2. Bibliometric analysis in sport and physical education sciences: State of the art

The interest in bibliometric analysis in our sphere compared to the same in other domains is obviously lower. In searches in the databases SportDiscus, ERIC, Sociological Abstracts, PsycINFO, PubMed (one of MedLine online variances) and LISA (Library And Information Science Abstracts) we found only 15 publications connected to the field of sport and physical education between 1977 and 2000 (see Appendix).

By contrast, we can give the following illustration: during the same period ERIC collected 77 documents concerning bibliometric aspects of education, Sociological Abstracts – 106 documents associated to bibliometric analysis of sociological information, PsycINFO – 53 documents related to bibliometrics in the psychological sphere, PubMed – 531 document connected to bibliometric investigations of medical information. A superficial analysis of these 15 publications reveals that:

– Eight of them concern general aspects: Szubra (1977), Rao (1984), Rao (1985), Ban (1986), Ban, Stalec (1987), Miranda, Mongeau (1991), Ban (1993), Liu (1996); five relate to aspectual outlooks: sport philosophy [Meir (1983)], sport sociology [Loy (1979)], sports medicine [Dean, Rose (1986); Kannus, Jarvinen (1998)], health education [Schloman, Byrne (1992)]; and one in the complex domain connected to all aspects (physical activity for aged [Lidor, Miller, Rotstein (1999)].
– From the "geographical" point of view, nine of them were spread all over the world [Meir (1983), Rao (1984), Rao (1985), Ban (1986), Dean, Rose (1986), Miranda, Mongeau (1991), Schloman, Byrne (1992), Kannus, Jarvinen (1998), Lidor, Miller, Rotstein (1999)] and other six deal with different regions [China - Liu (1996); North America – Loy (1978); Loy (1979); Poland – Szubra (1977); Yugoslavia - Ban, Stalec (1987); Ban (1993)].
– As to the "chronological" aspect, we can notice the steady level of interest of sport information professionals in this method.
– One research study has already based its analysis on databases study [Lidor, Miller, Rotstein (1999)].

Generally speaking, we can ascertain the sufficient variety of the themes discussed by our colleagues, and note only one major shortcoming – the obviously inadequate quantity.

But now we want to fix our attention not only on the past but, more importantly, on the future. We are certain that the consistent analysis of our domain with the use of bibliometric and informetric methods would be very useful for the entire scientific community – researchers as well as information specialists. Such intervention can give us the possibility to examine and reveal the modern trends of the domain's development and to build adequate tools of information support.

3. Conclusion

The ancient Chinese proverb says: *"Save us God from living in times of changes!"*. But the fate predetermined for us is to work just at such times - at the times of rapid hi-tech progress in the mainstream a "torrent of information". To conform with this situation, we have no alternative to the real and accurate knowledge of the information condition in our sphere, and here bibliometrics and informetrics can seriously help us.

We would like to hope that the following reports presented by us will serve as an additional argument for such confidence.

Bibliometric analysis of information related to exercise, physical education and sport (searches in the databases: SportDiscus, ERIC, Sociological Abstracts, PsychINFO, MedLine (PubMed), LISA).

Ban D. (1986) - *Bibliometric analysis of sports literature.* In: Bericht: VIII. Internationaler Kongress fuer Sportinformation 15-18.10.1985, Dresden - DDR, Berlin, Wissenschaftlicher Rat beim Staatssekretariat fuer Koerperkultur und Sport, pp. 139-143.

Ban D. (1993) - *Information services through national journal "Fizicka Kultura".* Unpublished IASI 9th scientific congress papers (Rome) (E.02), 7-9 June 1993, pp.1-15.

Ban D., Stalec, N. (1987) - *Struktura sportske periodike. (The structure of sports periodicals.).* (In-Serbocroatian). Fizicka kultura (Belgrade), v.41, N5, pp. 319-326.

Dean E., Rose S. (1986) - *Eminence in physical therapy with special reference to exercise therapy : a textbook definition.* International journal of rehabilitation research, v.9, n.2, pp.184-188.

Kannus P., Jarvinen M. (1998) - *Better recognition of orthopedics, traumatology and sports medicine in the system of journal ranking.* Acta orthopaedica scandinavica, v.69, N3, pp.222-223.

Lidor R., Miller U., Rotstein A. (1999*) - Is research on aging and physical activity really increasing? A bibliometric analysis.* Journal of aging and physical activity, v.7, N2, pp. 182-195.

Liu W. (1996) - *Research and definition of the core sports periodicals in China.* (In-Chinese). Sports science (Beijing), v.16, N6, pp. 4-10.

Loy J.W. (1978) - *Exploratory analysis of the scholarly productivity of North American based sport sociologists.* Unpublished conference paper (World Congress of Sociology, 9th, Uppsala, Sweden, 1978), pp. 1-26.

Loy J.W. (1979) - *Exploratory analysis of the scholarly productivity of North American based sport sociologists.* International review of sport sociology, v.14, N3/4, pp. 97-115.

Meir K.V. (1983) - *A meditation on critical mass in the philosophy of sport.* Journal of the philosophy of sport, v.10, pp. 8-20.

Miranda M.A., Mongeau D. (1991) - *An evaluation of journals in physical education, athletics, and sports.* Serials librarian, v.21, N1, pp. 89-113.

Rao D. N. (1984) - *Ranking of research journals in the field of physical education.* International library movement, v.6, N4, pp.175-183.

Rao D. N. (1985) - *Ranking of research journals in the field of physical education.* Library scientist, v.12, pp. 139-151.

Schloman B.F., Byrne T.J. (1992) - *Patterns of information transfer in health education: A bibliometric analysis of the research literature.* – Health education research, v.7, N1, pp.117-128.

Szubra, T. (1977) - Starzenie sie materialow informacyjnych w zakresie kultury fizycznej. (Ageing of information materials in the field of physical culture). (In-Polish). - Aktualne problemy informacji i dokumentacji, v.22, N6, pp. 38-40.

Bibliometric Analysis in Sport Sciences
A Comparison of *Movement – Journal of Physical Education and Sport Sciences* and *Journal of Sports Sciences*
S23

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1. Introduction

The comparative bibliometric analysis of two journals from different countries in the same sphere of knowledge can be very useful in many aspects. In addition to all features already mentioned in the parenthetic article[1], we see here some additional important options:

- first of all, such an analysis can give an idea of modern research tendencies in this field and their changes;
- secondly, the results can assist in checking the current presentation of separate themes on their pages, as well as preferences for one theme or another which can (or even must) be warranted or corrected;
- finally, it can be useful in the study of sport sciences from the point of view of sociology of science, providing many interesting features of the modern scientific community in this field.

Firstly, we want to briefly give the general characteristics of both editions:

1) *Movement – Journal of Physical Education and Sport Sciences* (or, as it called in Hebrew, "Bitnua") has been published bi-annually from February 1991 by the Zinman College of Physical Education and Sport Sciences at the Wingate Institute. From its inception it has won a reputation as the main Israeli scientific organ in this sphere. (Hereafter in Appendix – "Mvmnt")

2) *Journal of Sports Sciences* has been published from 1983 by the publishing house E. & F.N. Spon on behalf of the British Society of Sports Sciences and in association with the International Society for Advancement of Kinanthropometry. It is known now as one of the leading monthlies in the various aspects of the sport sciences. While it was originated mainly as a British journal, it has now became the prominent international organ in the field. (Hereafter in Appendix – "JSS")

2. Methodological remarks

A bibliometric analysis has many aspects and parameters. In this report we considered only some of them, choosing those closest to the aims of our study.

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[1] Lidor, R., Miller, U., Maharik, A., Sarig, A., Kenett, S. (2001). *Bibliometric analysis in sport and physical education sciences: background, guidelines and benefits* (in these proceedings).

The paramount aim of our examination was not only to reveal any strong and weak sides of these journals, but also to explore and to explain some common and differing tendencies of their publishing policy, reflecting various trends of development of the sport sciences.

The significant quantitative distinction of the materials issued by these two editions (which is the evident result of the "age" difference between them) makes the comparative study of the more or less strong leanings in their publishing policy (which can be stated as reflections of preferences of scientific interests) as the most meaningful part of that analysis.

In addition, it is clear that such quantitative disproportion causes us to base the research, first of all, on the comparison of the parameters' percentages as well as on their existence or absence.

3. Discussion

3.1. Thematic scope

Sport science is the complex sphere of knowledge which *"involves the systematic acquisition ands evaluation of information about sport, …includes any discipline which uses the scientific method and relies on observed information rather than biased judgement and vague impressions to explain and predict sports phenomena."* [2] *Journal of Sports Sciences* explains its aims and scope in a more or less similar way: *"The emphasis (…) is on the human sciences, broadly defined, applied to sport and exercise".*[3]

However, if we analyze the real content of these two journals some substantial differences are conspicious, as can be seen in Table 1 and Figure 1 (see Appendix).

First of all, the absence of kinanthropometrical research on the pages of *Movement* as well as inquiries commited to educational, philosophical and historical aspects of the field, together with the whole domain of physical education in *Journal of Sports Sciences*, have been marked.

If the case of *Movement* can only be fixed for the determination of publishing policy in future without any explanation, the lack of *Journal of Sports Sciences* could, at first sight, be due to the existence of a number of separate journals in these fields. But the same situation can be found in the other domains reflected in the pages of this journal. Therefore we are inclined to believe that such a state reflects the preferences of the editorial staff, because the statistics show the evident prevalence of the aspects related to the natural sciences in comparison with those connected to the social sciences and humanities. That publishing policy contradicts the above-mentioned definitions of sport science, including the one of the *Journal of Sports Sciences* itself.

But if we look at the statistics of these two journals from the standpoint of alignment of different domains in a whole volume of articles, the picture can be very interesting.

We can idenify these figures as the vivid expression of research interests and tendencies, reflected by the editors of two journals. But, nonetheless, some curious features can be marked.

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[2] Kent, M. (1994) - *The Oxford Dictionary of Sports Science and Medicine*. Oxford-New York-Tokyo : Oxford Univ. Press, p.420.

[3] See *Aims and scope* on the on the inner side of *Journal of Sports Sciences'* cover.

For the more obvious analysis let us divide all these domains into two parts: "basic" and "aspectual". The "basic" domains, namely "physical activity", "sport", "physical education" and "special physical education and sport", statistically and graphically look as follows (see Tables 2, 3 and Figures 2, 3).

Here we see the huge prevalence of the sport sphere in both journals, but nevertheless the range of this disproportion in *Journal of Sports Sciences* is approximately double that of *Movement*.

The "aspectual" domains, according to whether they belong to one of three scientific fields (natural, educational or social and humanities), can be assigned as follows:

–   "natural": anatomy and physiology, motor behavior, kinesiology and biomechanics, kinanthropometry;
–   "educational": teaching, education and professional training;
–   "social": sociology, philosophy, psychology, history.

If in the case of *Movement* we have approximately the same proportions for each of these "aspectual" domains; the picture of *Journal of Sports Sciences* looks otherwise: the huge "skyscraper" of natural sciences literally overcomes its imperceptible "neighbours".

In addition, the special attention to the educational problems on the pages of *Movement* is evident. This can be explained as the result of the main aim of Wingate Institute and Zinman College – the professional preparation of coaches, sport instructors and physical education teachers. But this can not be a rationalization for the lack of material on so significant a component of sport sciences as sport education in the *Journal of Sports Sciences*.

So, we can state the disparity in the presentation of some aspects of sport sciences on the pages of *Journal of Sports Sciences*, which contradicts the maxims of the journal itself.

3.2. Authorship patterns

Authorship patterns (gender alignment, number of authors per article, etc.) are one of the parameters frequently used in bibliometrics. We in this research consider only one of them – authors' number per article. This problem has already drawn the attention of some authors in the field of bibliometry from the point of view of one or some specific journals in their historical perspective (the chronological changes of shares of some scientific "domains").[4]

First of all, look at some statistical data and their graphical manifestations (see Table 4 and Figure 4). Here, together with some similar tendencies, the evident distinctions between two journals can be seen. The main one of these divergences is the total lesser number of authors' number per article for *Movement* in comparison with *Journal of Sports Sciences*.

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[4] See, for example: Harsanyi, M.A. (1993) - *Multiple authors, multiple problems – bibliometrics and the study of scholarly collaboration : a literature review*. Library & Information Science Research, v.15, N4, pp.325-354; Sampson, Z.J. (1995) - *Forty years of the Physical Review and Physical Review Letters*. Scientometrics, v.32, N2, pp.219-226; Cunningham, S.J., Dillon, S.M. (1997) - *Authorship patterns in information systems*. Scientometrics, v.39, N1, pp.19-27; O'Neill, G.P. (1998) - *Authorship patterns in theory based versus research based journals*. Scientometrics, v.41, N3, pp.291-298.

But the number of authors per article is closely connected to a process of "research team" organization, which (even abstracted from some traditional or ethical peculiarities of the organization of the scientific process in one or another country) has its own objective, specific features in many countries.[5] For instance, the geographical parameters of Israel limit the "team-making" possibilities in the Israeli scientific community, and the geopolitical and linguistic attributes make the process of organization of any international research team more complicated in comparison with their European and American colleagues, although, as we remember from the last Paris IASI congress, it is not a crucial obstacle. [6] Nevertheless, we think that this situation alone can be one of the most probable explanations for these differences.

3.3. Authors' nationality

It is obvious that the spectrum of the authors' nationality in *Journal of Sports Sciences* (Austria and Botswana, Belgium and Fiji, Finland and Israel, France and New Zealand, Japan and Netherlands, Norway and Singapore, etc) is far more vivid than the same for *Movement*. The cause of such divergence is obvious: the sharp difference between the English and Hebrew languages in general prevalence as well as in scientific usage.

Nevertheless, despite the current objectively international character of *Journal of Sports Sciences*, about one third of its authors showed in their articles the fruits of the labour of British institutions. What is more, fully or partially English-speaking countries (Great Britain, USA, Canada, Australia, South Africa, New Zealand, Ireland) represented nearly three quarters of all the contents of this journal.

But if we compare the types of institutions represented by the authors of these journals, a different picture will come into view, as can be seen in Table 5 and Figure 5. Here we can see some qualitative distinctions between the two journals.

Firstly, we see that each of these two organs has some institutional types which are not included in the second. For the *Journal of Sports Sciences* such absent types are "Domestic schools" and "Foreign schools". For Movement – "Foreign colleges", "Foreign schools", "Foreign hospitals" and "Other foreign institutions".

The main difference here obviously run across two coordinates: "ordinata", determined by "institutional types", and "abscissa", determined geographically (or, to be more precise, "domestic-foreign").

The ordinata demonstrate that most scientific research on the fields published in *Journal of Sports Sciences* is prepared at universities (more than 66%) while in *Movement* approximately the same portion (more than 58%) of the contents was prepared at Israeli colleges.

From the very beginning it may be thought that such a situation reflects the difference in qualitative levels of the publication of these two journals, but this assumption contradicts the data concerning the participation of Israeli authors (all of them from the Wingate Institute) in the *Journal of Sports Sciences* mentioned above. Compared to other institutions, the number of Wingate publications in this journal shares the total 9th-11th places with the articles of prominent universities such as those of Birmingham

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[5] See, for instance: Zainab, A.N. (1999) - *Personal, academic and departmental correlates of research productivity : a review of literature.* Malaysian Journal of Library & Information Science, v.4, N2, pp.73-110.

[6] See: Miller, U., Vibe, A.-M., Tie, M. (1997) - *Sport thesauri construction in different languages: linguistic problems and their solutions.* In: International Association for Sports Information. Scientific Congress (10th : 1997 : Paris). Papers, Paris, INSEP – Publications : IASI, pp. 137-160.

and Copenhagen. And if we take into consideration only non-English authors, those of Wingate share 2nd and 3rd places with their colleagues of the University of Copenhagen, only behind researchers of the Netherlands Vrije University. Therefore, we think that this phenomenon can be explained only by the organizational differences of European and Israeli systems of physical education and sport sciences, specifically, the real concentration of Israeli researches in these fields in colleges and not in the universities, as well as the essential university quality of the Wingate Institute. (The overall eleventh place of Israeli authors as well as their second-third place among all non-English representatives can be seen as evidence.)

As to the abscissa, the main cause of such a distinction is obvious and consists of the drastic difference between the English language - the most widespread world language as well as the common means of scientific contacts, and the Hebrew language - classical but renewed and rare.

3.4. Number of references

Information on the number of references presented in both journals is represented in Tables 6 and 7 and Figures 6 and 7.

Here we see that while the articles of all domains published in *Movement* have more or less the same average number of references, the same parameter in *Journal of Sports Sciences* (besides "physical education" – the domain not represented on its pages) has appreciable changes in two domains: one "basic" ("special physical education & sport") and one "aspectual" ("educational").

We can not explain the reasons for the obviously more thorough reference grounds of educational problems in *Journal of Sports Sciences*. Unfortunately, no research has been carried out in the investigation of reference modes in different scientific spheres, and, therefore, we have not found the same parameters for any other investigations even for comparison purposes. But, as we see it, one possible reason for such a situation can be found in the same prevalence of the "natural" domain which was mentioned above. The editorial body of the journal considers this sphere of sport sciences as "outlying", and therefore (as many editors all over the world act in the same circumstances) want to make every publication from this domain much more well-founded.

4. Conclusions

The comparison of the two journals enables one to infer that the editorial policies of both of them concur in many respects and reflect some general tendencies of contemporary sport science development. At the same time, several disproportions can be marked. Some of them have a more or less objective character and do not depend on the free will of editors but some are urgently in need of correction.

From this comparison we can see a real opportunity of cooperation of these two journals in many aspects of their editorial policies.

Table 1
Thematic scope of the journals

Scientific fields	Number	Number	In % to total sum	In % to total sum
	"JSS"	"Mvmnt"	"JSS"	"Mvmnt"
Anatomy & physiology	256	17	23.64	9.04
Teaching	3	20	0.28	10.64
Professional training	45	5	4.16	2.66
Motor behavior	36	20	3.32	10.64
Education	0	7	0	3.72
Physical education	0	12	0	6.38
Sociology	10	5	0.92	2.66
Sport	412	34	38.04	18.08
Philosophy	0	1	0	0.53
Psychology	77	27	7.11	14.36
Physical activity	31	11	2.86	5.85
Special PE & sport	2	13	0.18	6.91
Kinesiology & biomechanics	109	2	10.06	1.06
Kinanthropometry	47	0	4.34	0
Research methodology	55	5	5.07	2.66
History	0	9	0	4.79
Sum	1083	188		

Figure 1
Thematic scope of the journals
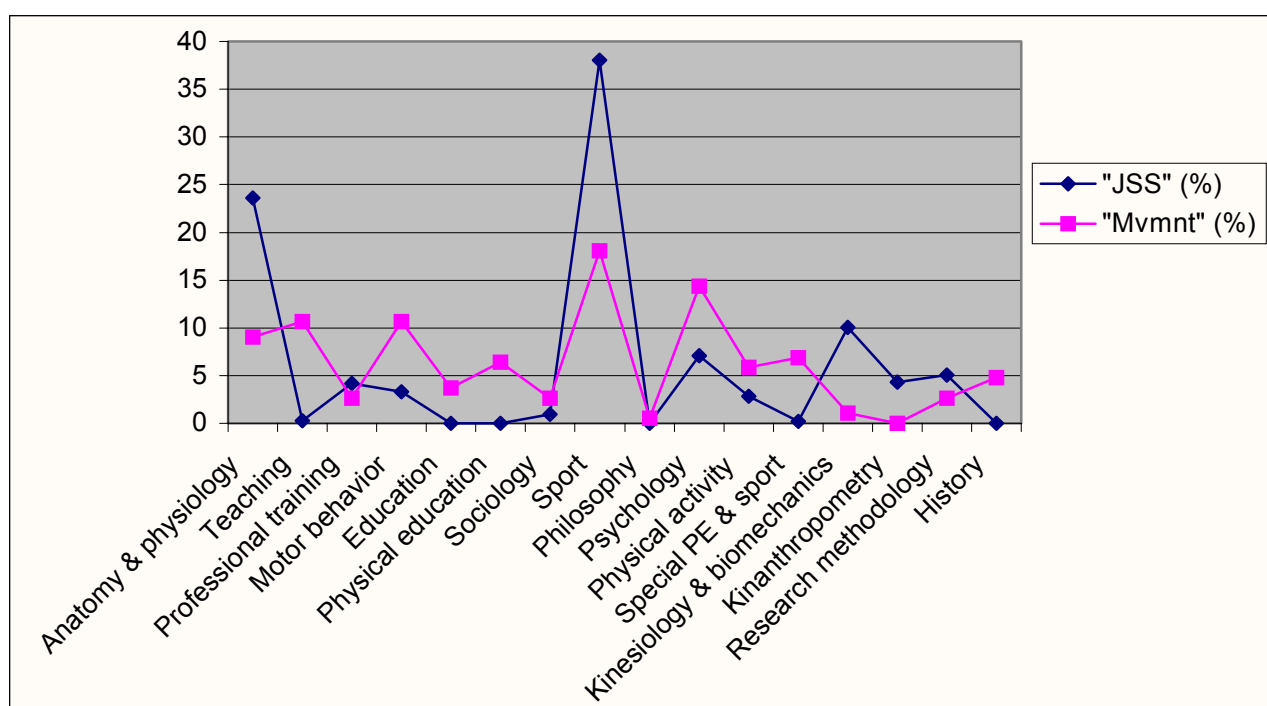
Table 2
Articles' distribution by "basic" domain

"Basic" domains	"JSS" (%)	"Mvmnt" (%)
Physical activity	2.86	5.85
Sport	38.04	18.08
Physical education	0	6.38
Special PE & sport	0.18	6.91

Figure 2
Articles distribution by "basic" domain
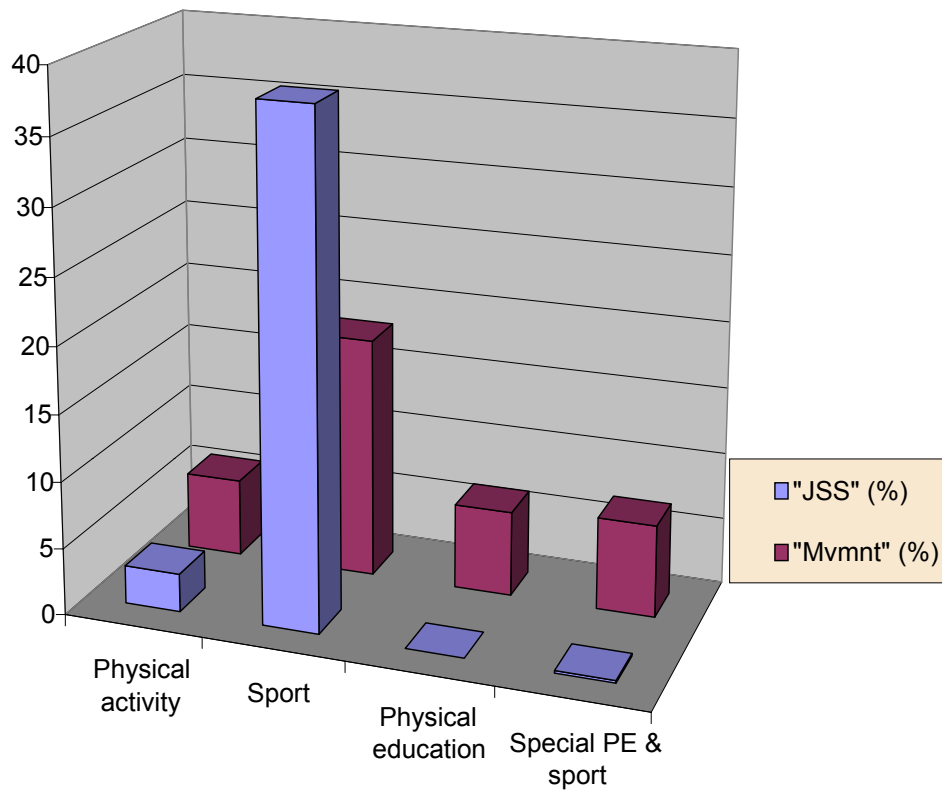
Table 3
Articles' distribution by "aspectual" domain

"Aspectual" domains	"JSS" (%)	"Mvmnt" (%)
Natural	41.36	20.74
Educational	4.44	23.04
Social & humanities	8.03	22.34

Figure 3

Articles' distribution by "aspectual" domain
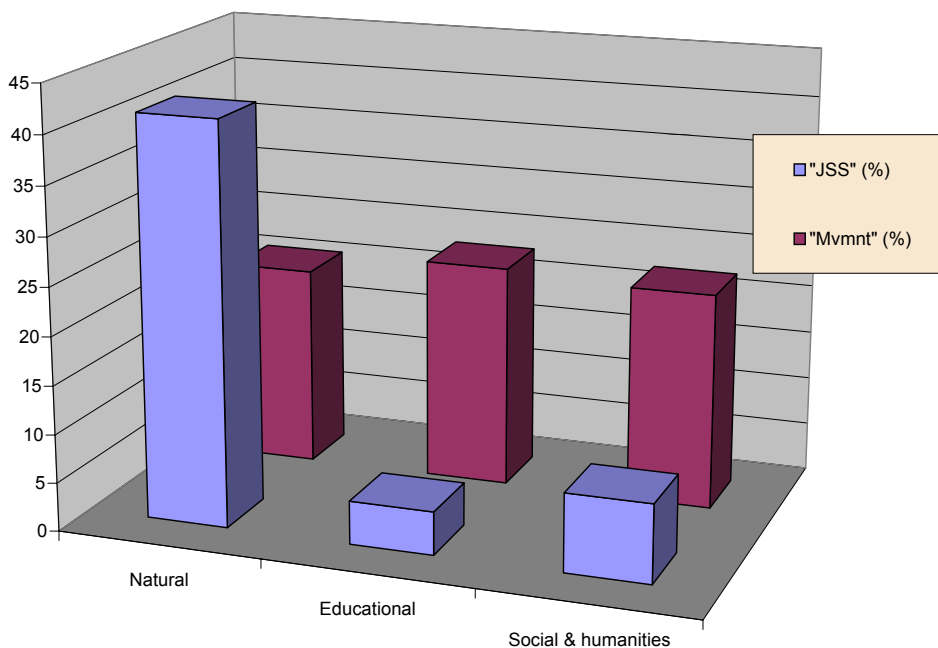
Table 4

Average number of authors per article in the "basic" and "aspectual" domains

Domains	"JSS"	"Mvmnt"
Physical activity	2.74	1.8
Sport	2.77	1.9
Physical education	0	2.17
Special PE & sport	2	1.9
Natural	2.8	2.55
Educational	2.875	1.95
Social & humanities	2.55	1.6

Figure 4

Average number of authors per article in the "basic" and "aspectual" domains
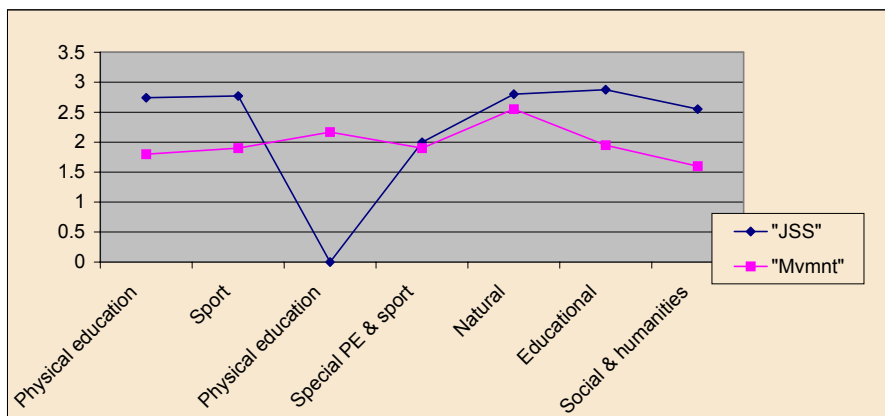
Table 5
Authors' institution

Institutional types	Number	Number	In % to total sum	In % to total sum
	"JSS"	"Mvmnt"	"JSS"	"Mvmnt"
Domestic universities	50	8	10.89	8.42
Domestic colleges	8	55	1.74	57.89
Domestic schools	0	1	0	1.05
Domestic hospitals	1	5	0.22	5.26
Domestic other institutions	83	20	18.08	21.05
Foreign universities	256	6	55.77	6.32
Foreign colleges	9	0	1.96	0
Foreign schools	0	0	0	0
Foreign hospitals	6	0	1.31	0
Foreign other institutions	46	0	10.02	0
Sum	459	95		

Figure 5
Authors' institution (in %)
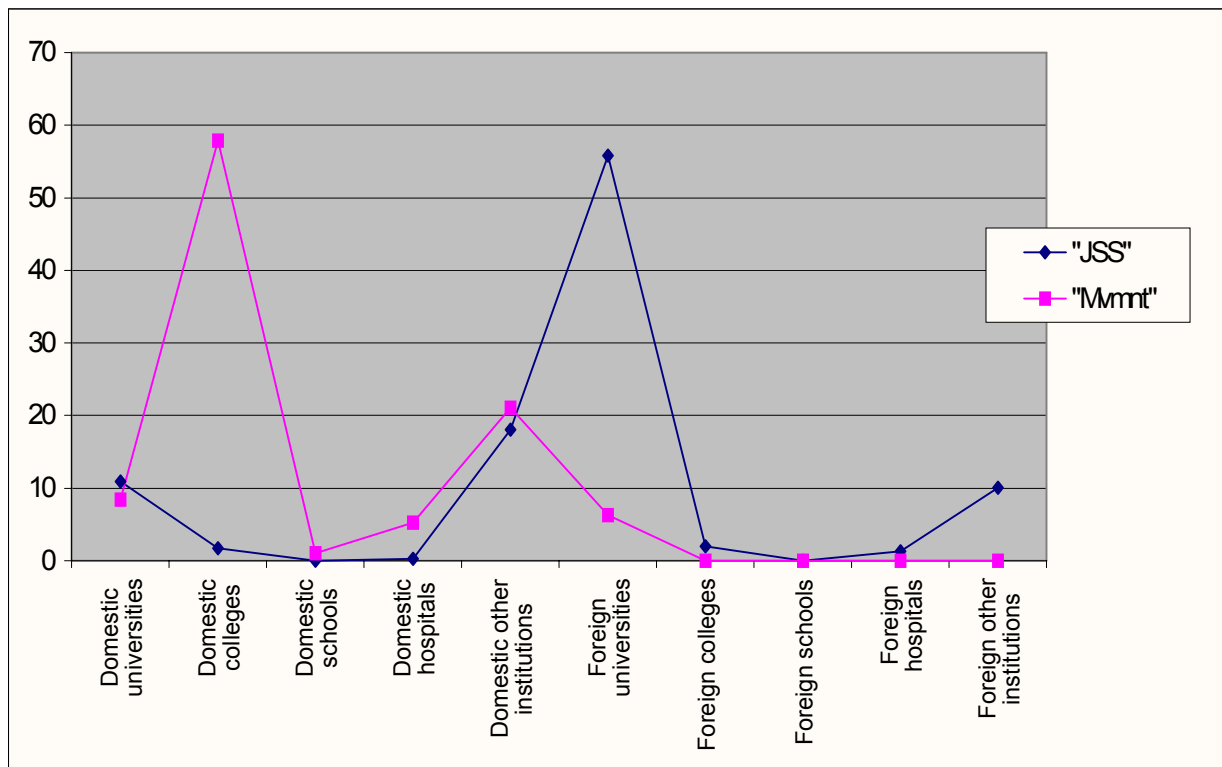
Table 6
Average number of references

Domains	"JSS"	"Mvmnt"
Anatomy & physiology	34.1	29.9
Teaching	67.7	35.7
Professional training	34.6	40.8
Motor behavior	33.5	39.2
Education	0	40.1
Physical education	0	37.1
Sociology	37.5	27.6
Sport	34.1	37.9
Philosophy	0	46
Psychology	38.3	39.1
Physical activity	33.8	32
Special PE & sport	78.5	31.4
Kinesiology & biomechanics	29.6	25
Kinanthropometry	32.8	0
Research methodology	22.4	4.6
History	0	26.1

Figure 6
Average number of references
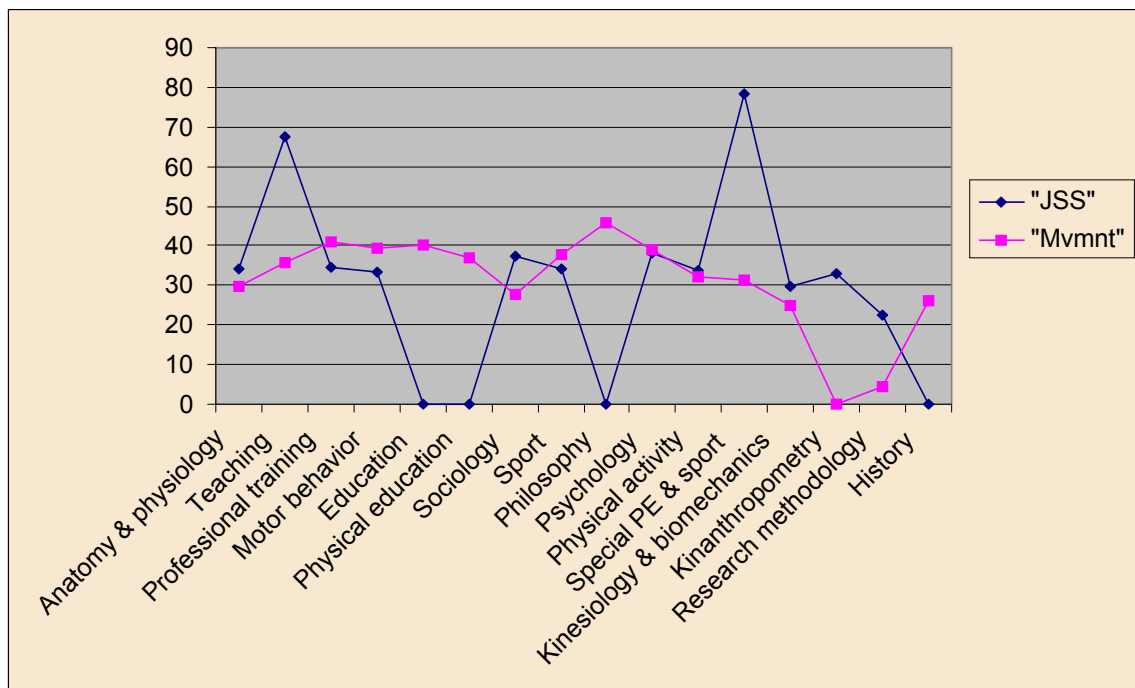
Table 7
Average number of references (by domains)

Domains	"JSS"	"Mvmnt"
Physical activity	33.8	32
Sport	34.1	37.9
Physical education	0	37.1
Special PE & sport	78.5	31.4
Natural	32.5	31.4
Educational	51.2	38.9
Social & humanities	37.9	34.7

Figure 7
Average number of references (by domains)
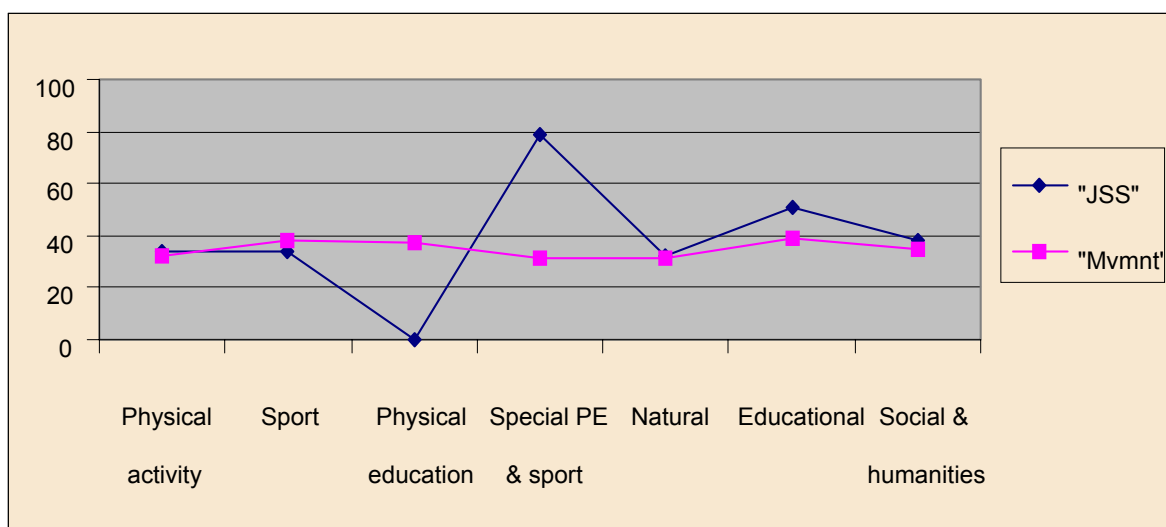
Research on Motor Skill Acquisition
Where are the Young Learners?
S23

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Scientific research in the field of motor learning is probably one of the very significant contemporary explorative themes. It touches upon the great complex domain of human being, connected to psychophysiology, kinesiology, biomechanics, education, etc. This subject is not restricted "in space and time" since it is very important for every human condition and age, from an absolutely healthy athlete to a burdened with problems disabled as well as from an infant of only early monthes of his life to a venerable old man.

Such considerations for motor learning raised our desire to know the distribution of researchers' interest according to age groups and, in consequence, to reveal some scientific preferences.

In Table 1, the four leading databases providing information on motor learning are qualitatively differ in their volumes - ERIC is more than half than SportDISCUS; PsychInfo is nearly twice bigger than ERIC; and MEDLINE is almost seven times larger than PsychInfo.

On the other hand, the huge majority of documents represented by the databases are English-language documents (88.5% in MEDLINE and 99.5% in ERIC), which can be explained by principles of supply of every of these databases as well as by the obvious role of English as the worldwide common scientific language. Naturally, we have here a number of documents that are included in more than one database, however, it is not substantial for the aims of our bibliometric analysis.

Table 1 presents information on motor learning in each of these databases. The prevalence of SportDISCUS is visible, but it is also clear that any full information search on this problem urgently needs use of all these databases because of their different thematical scopes.

Table 1
The bibliometric information emerged from the databases

Document types	0-3 years	3-5 years	5-8 years	8-13 years	13-18 years
Proceeding papers	0.78%	2.26%	1.63%	1.48%	0.16%
Journal articles	7.08%	10.74%	11.60%	11.98%	12.30%
Collected articles	0.07%	1.17%	1.48%	1.56%	0.54%
Theses	1.17%	2.02%	2.18%	2.49%	0.86%
Monographs	1.32%	1.79%	1.32%	1.01%	0.23%

This bibliometric analysis is based on documents appeared in SportDISCUS because this database (as we can conclude from our day-to-day practice) collects materials of the examined field in the most complex way and includes all possible aspects (educational, psychological, medical, etc), without any preliminary thematical selection. Our analysis revealed that research in motor learning on children and adolescents attracts the most intent researchers' attention among all age groups catching the lion's share of all motor learning publications (more than 75% of them).

But now we would to discuss another question: In what way are the research interests in this field distributed among age groups of children and adolescents, or (formulating it in another way) do researchers show here any scientific preferences ?

We built for our analysis such a system of children and adolescents' age groups that it should as much as possible correspond to these systems of all examined databases (which are built for every concrete database according to its needs and interpretations accepted in trated field of knowledge). Our construction is as follows:

- infants and toddlers (0-3 years old)
- pre-school children (3-5 years old)
- early-school children (5-8 years old)
- preteen children (8-13 years old)
- adolescents (13-18 years old)

In general, research interests are concentrated in 3 consecutive age groups covering ages from 3 to 13. The researchers' attention is obviously slakened to the age group of 13-18 years old and even more (almost twice) – than the age of 0-3 years old.

Now we would like to go deeply into analyzed materials. For this purpose, we examined these age-grouped documents from a view of document type. It is already axiomatic that all most common scientific documents can be put in order according to their novelty (e.g., beginning from latest) by such a way:

1) proceeding papers
2) journal articles
3) collected articles
4) theses
5) monographs

Some observations can be made on one or another document type according to age groups. Just the considerable decrease of parameters of all four document types directly reflecting research results ("proceeding papers", "journal articles", "collected articles", and "theses") for these 2 age groups ("infants and toddlers" as well as "adolescents") gives us possibility to establish the apparent lack of research consideration to this problem.

Such disproportion seems to be strange because of the importance of the discussed themes for the development of motor skills from the very beginning of human being. What is more, exactly these 2 age groups seem to be the most significant for that domain research. The first ("infants and toddlers") is "start-up" determining all future human psychophysical development, and the second ("adolescents") is period of completion of sharp psychophysiological changes of a man. Therefore, such obvious in the most cases lowering of research interest to motor learning of just these 2 age groups looks absolutely unwarrantable.

In our presentation, the relevant data collected in this bibliometric analysis will be presented by tables and figures.

Runs Analysis – A Tutorial with Applications to Sport
S24

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In the world of sport there are many situations in which events with a finite number of possible outcomes occur repeatedly, and in which the outcome is determined in a simple way. A familiar example is free-throws by a player in the game of basketball. Each free-throw constitutes a trial with just two possible outcomes (if we exclude rare outcomes such as lane violations) and, in general, the outcome is determined solely by the performance of the shooter.

The question often arises whether the outcomes of a series of events such as just described are independent events or if they are dependent on previous outcomes. In the language of basketball this is equivalent to the question of whether players have hot and cold shooting streaks or not. Spectators generally believe in hot streaks. Most coaches know that they do not. But, how do they know this? The answer, or at least *an* answer, lies in statistical known as the analysis of runs.

The term "run" may be applied to any series of trials having a common outcome when two or more distinguishable outcomes are possible. A string of successful (or unsuccessful) basketball free-throws is a run. Many phenomena in sport and exercise involve events that may be quantified in terms of runs and there are many unanswered questions in these fields that may be answerable through the statistical analysis of runs. In the gambling game of roulette, for example, many players believe in the tactic of betting for or against a repetition of an even-money outcome, erroneously thinking they might game an advantage that way. The statistical methods of "runs analysis" may be used to test such beliefs and to answer many similar questions. What I hope to do in this presentation is to briefly introduce the methods of runs analysis and provide some examples of it application to sport.

1. Trials and runs

Consider the term "trial" to mean a single instance of an event to which there are two or more possible outcomes. A toss of a coin, a basketball free-throw, and a serve in tennis or volleyball are all trials. The possible outcomes of a trial may, of course, be defined in different ways. The outcome of a basketball free-throw is usually defined according to whether it scores a point (success) or does not (failure). A "run" is defined as a series of trials having a common outcome according to some pre-determined definition of a finite number of possible outcomes. A series of free-throws that all score is a run. A series of free-throws that all fail to score is also a run... Outcomes of trials may be defined in various ways, including an identical categorical outcome such as a serve in vs. a serve out of bounds, an identical direction of change in an outcome, such as an increase or decrease in a golfer's score, or in other ways. Runs defined as a series of similar outcomes are referred to as ordinary runs. Runs defined as a series of similar directions of change or other relationship between sequential outcomes are called runs-up or runs-down.

The methods of runs analysis do not require the probabilities of each possible outcome to be equal. However, current techniques for the analysis of runs do depend on the validity of the assumption that such probabilities do not change systematically during a series of trials.

Runs tests are usually applied to the problem of deciding whether the events in a series are independent or not. The basis of the test is the fact that, assuming the overall probability of each possible outcome does not change, the number of runs that will occur if the events are independent is statistically predictable. If the number of runs that actually occurs is different from that predicted by independence, then the events may be judged to be not independent, within a known confidence interval. Applied to the basketball free-throws problem, this means that for any given overall shooting percentage and number of attempted shots, the number of runs, as well as the number of runs of any length, is predictable. By simply counting the number of runs that actually occur we can estimate the probability that each shot is an independent event.

There is not time here to delve into the details of runs analysis theory, or even to present details of the kinds of data treatable by the analysis of runs. Therefore, the remaining time is devoted to presentation of several sport-related examples.

Example 1
Simple runs test - basketball free throws

Let us consider two basketball players and their success or failure in shooting free throws over the course of a season. One player made 19 attempts and achieved a free-throw shooting percentage of just over 50 percent and the other made 75 percent of 50 shots. The player with the 50 percent shooting percentage (Player A) is an example of a situation in which the two possible outcomes have equal probabilities, whereas the player with the 75 percent statistic (Player B) is an example of a situation in which the outcomes have differing probabilities.

Applied to a series of basketball free-throws a runs test tests the hypothesis that whether or not a shot is made has nothing to do with whether or not the previous shot (or any other) was made. It is a test of whether the number of runs (the sum of runs of both of hits and misses) is consistent with the number that should occur if each trial (shot) really is an independent, chance event. The number of runs should be significantly fewer than predicted by chance if hot or cold streaks really exist. It should be higher if the result of a shot increases the chance of the opposite result in the next shot.

The results of each player's attempts are shown in Figure 2, with runs of shots made overscored and runs of shots missed underscored. As can be verified by the reader by counting, player A has 7 runs and player B has 14 runs.

Our hypothesis is that players do have hot and cold streaks. Therefore, we have a directional hypothesis that there will be fewer runs that should occur by chance, and the one-sided (directional) test is correct statistically. Player A made 10 shots and missed 9 shots. Because there are fewer than 20 trials and fewer than 12 of either type we will use the ordinary runs test tables rather than a z-test. Referring to a standard table of left-hand probabilities for the distribution of runs with 10 and 9 cases of each outcome (Gibbons, 1985) we find that the probability of obtaining seven or fewer runs by chance is .077. This means that seven or fewer runs will be obtained by chance about 7.7 percent of the time. If we had set an alpha level of 5 percent, we must conclude that we have no evidence of hot or cold streaks. If we had observed only 6 runs, however, the probability would be .029 and an alpha level of 5 percent would lead to the conclusion that we do have evidence for streaks.

Player B made 38 of 50 shots. Both because the total number of trials exceeded 20 and because the number of each outcome exceeded 12 we must use the z-test approach to a runs test. The equation for the z statistic used in a runs test is shown in equation 1. Player B attempted 50 shots, of which 38 were made and 12 missed in 14 runs. Substituting these values into the equation we obtain a z value of 1.87. At an alpha level of 5 percent the z value required for significance in a one-tailed test is 1.65. Therefore, we must conclude that we do have evidence for streaks.

Example 2
Runs test of several combined series of trials - basketball free-throws

There may be many cases in sport in which a runs test is appropriate but in which there may be very limited data available about individual players or cases. On the other hand, there may be data available, albeit limited, about every player in some group. Each member of a basketball team, for example, should have attempted some number of free-throws in the course of a season. Some players will have attempted many shots; others only a few. Therefore, rather than examining the shooting of one player at a time, let us consider a whole team or possibly even a larger group of players. Over the course of a season this gives us substantially more data to work with and should give us a better picture of the presence or absence of streaks in free-throw shooting.

Figure 3 shows the free-throws made and missed over the course of a season by ten members of a basketball team. Overall shooting percentages vary from 26 percent to 70 percent, but are assumed not to change during the season for individual players. The number of shots attempted varies from 11 to 102 and the number of runs is also quite variable. In evaluating runs from multiple series of trials, as must be done in this case, it must be recognized that the expected number of runs in each series of trials depends on the probabilities of each outcome as well as the number of trials. Therefore, the data must be combined in such a way that the overall expected number of runs is not altered. This may be accomplished using a variation of the equation used for individual series of trials in which the numerator and denominator for z are summed across all series, but with the correction factor for continuity applied only once and the denominator weighted for the number of trials in each series… The equation for the z statistic for combined series of trials is shown in equation 2. Substituting the values given in Figure 3 into this equation we obtain a z value of 2.489. At an alpha level of 5 percent, the z value required for significance is 1.65. Therefore, we must come to the conclusion that there is evidence in this data for the existence of streaks.

Example 3
Three or more possible outcomes - baseball pitch selection

The runs test described in example 1 can be performed on artificially dichotomized data by simply transforming elements of the original data to 1's and 0's (or other symbols) based on the original median, mean, or other cut point. Such a test may be used as a rough test of randomness but involves a substantial loss of information and so is rarely used when the original data is interval or ordinal in scale. However, in the world of sport there are certain situations in which the idea of artificial dichotomization may be usefully applied. These are situations where we want to test the randomness of a series of trials in which there may be three or more categorical outcomes. The hypothesis to be tested is that each trial is independent of every other and is thereby determined only by the overall probability of each alternative outcome. The alternative is that the outcome of each trial is affected by the outcome of previous trials.

Let us consider the selection of pitches by a pitcher in baseball. For purposes of example we will declare that this pitcher can deliver three types of pitch, fast, curve, and slider, and that the overall percentages for each pitch are 50, 30, and 20 percent. If an opposing batter can correctly guess the type of pitch about to be delivered, an advantage may be gained.. If the batter guesses fast ball there is a 50 percent probability of being correct. This is the best that can be done (short of stealing signs) if the pitches are randomly selected. However, if the pitches are not random in selection, then the batter who can detect the underlying pattern can gain a potential advantage (he or she must still hit the ball, of course). Figure 4 shows a sequence of 50 pitches for the pitcher just described. Although they are not marked in Figure 4, one may see by inspection that runs of pitches do occur.

At this point there are two alternative approaches to a test of runs, neither of which is commonly described in nonparametric statistics texts. One approach is to use a test based on the multinomial distribution of runs, described by Mood (1940). The second is to redefine the outcomes in the original data so as to create several artificial dichotomies and then use the runs test (described in example 1) based on the binomial distribution of runs. Both approaches are demonstrated below.

Method based on the multinomial distribution

For data sets consisting of a small number of trials, there are no tables available for a multinomial runs test. However, it is known that the distribution of runs in this circumstance is asymptotically normal. Therefore, a z test is feasible when the number of trials is high (more than 30 or so) as it is in our example. The equation for the z statistic used in a runs test is shown in equation 3. Substituting values from the data given in Figure 4 into this equation gives a z value of 5.99, which is significant at the 5 percent alpha level.
This tells us that the number of runs is different from that predicted by chance, but it does not demonstrate the source of the difference.

There could be an overall pattern to all of the pitches or the source of the difference could be a pattern involving some of the pitches but not all. We must, therefore, look further. The distribution of runs of individual types of outcomes in this situation is also asymptotically normal, so a test based on the normal distribution is possible for each type of outcome, provided there are 30 or so trials. The equation for the z statistic used is shown in equation 4. Substituting values from the data in Figure 4 gives chi-square values of 16 for the fast ball, 2.57 for the curve ball, and 4.8 for the slider, all of which are statistically significant for an alpha level of 5 percent.

Method of dichotomization

A much easier procedure computationally is to transform the original data into every possible artificial dichotomization. A simple runs test can then be done on each set of transformed data, although often the dichotomization process itself may identify patterns present in the original data.

In a series of 0's, 1's, and 2's, as the pitches in Figure 4 are represented, there are three possible dichotomizations; one between 0's and not 0's, one between 1's and not 1's, and the third between 2's and not 2's. Using numbers to save space, the transformed sequences of the data in Figure 4 are shown in Figures 5a, 5b, and 5c. Runs tests performed on the transformed data produce z values of 2.369, 0.839, and 3.518, two of which exceed the critical (two-tailed) value (1.96) needed for a conclusion of significance at an alpha level of 5 percent (note that this is a somewhat different conclusion than that reached by the method based on the multinomial distribution). The z values are significant for the dichotomizations involving sliders and fast balls, but not for curve balls. This suggests that perhaps there is something about the occurrence of sliders and/or fast balls that is not random. Exactly what is

not random is not identified by the runs tests but the source may be by a careful visual inspection of the original data. The source is, indeed, that the pitch following a slider is not random.

It is always a fast ball. Knowledge of this, assuming the pattern continues, could give an opposing batter a very significant advantage the next time a slider has been observed.

<div align="right">

Example 4
Runs up and down

</div>

Suppose a football coach has obtained scouting information that includes the point of attack for all of the running plays attempted by a forthcoming opponent. This data is displayed in Figure 6. Each play is described as attacking to the right or to the left of the point from which the ball is centered. Data for 100 plays is available, consisting of a series of 99 R's or L's, with an occasional "C" to indicate a play attacking directly through the centering point. There are 65 plays attacking to the right, 33 plays attacking to the left, and two plays attacking the center. The coach believes that, unless there is evidence of a change in the future opponent's play selection, this data indicates that a prediction that a play will be to the right will be correct about 65 percent of the time. However, the coach is also interested in whether a runs test could improve the chances of correctly predicting a play's point of attack.

 The coach's hypothesis is that the number of runs of plays to each side is different from the number predicted by chance. It may be higher if the opposition changes sides too frequently or lower if the opposition changes sides to infrequently. A two-tailed test, therefore, is called for. The null hypothesis is, of course, is that the number of runs is as predicted by chance. Except for the occasional "C" in the data, it appears the same as the free-throw data in example 1, and we might be tempted to attempt an ordinary runs analysis. However, a close consideration will reveal that this is inappropriate for several reasons.

First, the ordinary runs test does not have any real provision for dealing with ties (the C's in this case). (If ties occur rarely in interval measurements that are to be dichotomized they are simply discarded from the data - if they are numerous the ordinary runs test is probably not appropriate). Second, the ordinary runs test is a test of the independence of each outcome in a series of trials. In this case, however, we already know the trials are not independent. Each play is recorded as to the right or to the left **relative** to the previous play. Third, because the position from which a play starts depends on where the previous play ended and because the ball must be placed within the zone between "hash marks" in the center area of the field, the placement of the ball affects the probability of the next play being to one side or the other. If the ball is as far to one side as it can be placed, there is less field to be attacked on that side than on the other.

Although the ordinary runs test is not appropriate here, a very similar procedure known as a test of runs-up and down can be used. The procedure begins with transformation of data on a series of ordinal or higher scale outcomes into a series of "ups" and "downs". These may be represented as 1's and 0's, U's and D's, R's and L's, or in any other dichotomous manner. Note, however, that the sum of ups and downs is always one less than the number of outcomes in the original series of trials. The first outcome in a series does not have a predecessor to which to be compared. The next step is to handle ties. If there are just a few ties, as is the case with our football plays, they are usually simply discarded. If there are many ties, however, there is no really satisfying way to handle them. A tie between an up and a down is generally treated as marking the boundary between two runs. It can be discarded from the data. A tie between two ups or two downs, however, leads to a major complication. Such a tie either ends a run or it continues a run and there is no satisfactory way to decide which it does.

Generally the runs test is performed twice, once with the number of runs maximized by the treatment of ties and once with it minimized. The final step is to count the number of runs and perform the runs test. A table of runs up and down is used if the number of trials is small. If there are 30 or more trials a z test may be used, just as with the ordinary runs test. The equation for the z statistic for runs up and down is shown in equation 5. Substituting data from the football plays into this formula produces a z value of 4.09 which exceeds the value required for significance at the 5 percent alpha level. Thus we may conclude that the number of runs is less than would be expected by chance. The opposing team tends to continue to attack the same side as the previous play more often than it attacks the opposite side.

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Figure 1a

HHTHTHTTTHHTHTHHTHHT

Figure 1b

HHTHTHTTTHHTHTHHTHHT

Figure 2
Free Throw Results for Two Players

Player	Shot Sequence	Shots Made/Missed	Percentage	Runs
A	11001001110000 1111	10/9	52.6	7
B	11111110111001 11110111100111 11110001111011 11111100	38/12	76	14

Figure 3
Free-Throws and Runs for a Season for a Team of 10 Players

Player	Attempts	Made	Missed	Percentage	Runs
1	88	62	26	70.4	36
2	96	37	59	38.5	41
3	36	17	19	47.2	22
4	15	6	9	40.0	9
5	102	28	74	27.5	48
6	23	6	17	26.1	12
7	67	27	40	40.3	41
8	53	22	31	41.5	25
9	11	3	8	27.3	6
10	38	14	24	36.8	21

Figure 4
Sequence of Types of 100 Baseball Pitches

Pitch Sequence	Fast = 0	Curve = 1	Slider = 2
0101010120201120000120011101200120001200201201020010110100010201201020110201110202012000102010020200s	Fast = 50	Curve = 30	Slider = 20
	Runs = 35	Runs = 23	Runs = 20

Figure 5a
Transformed Pitch Sequence Data – Transform 0 Pitch to 1 Pitch

1111111121211112111112111111121112111121121121112111111111111121121112121111121111112121121111112111121211
1 = Not Slider   2 = Slider
Sliders = 20   Not Sliders = 80   Runs = 41

Figure 5b
Transformed Pitch Sequence Data – Transform 0 Pitch to 2 Pitch

212121212222112222212221112122212222122222122122221211212221222122122221122211122222122221222122222222
1 = Curve   2 = Not Curve
Curves = 30   Not Curves = 70   Runs = 47

Figure 5c
Transformed Pitch Sequence Data – Transform 1 Pitch to 2 Pitch

0202020220202220000220022202200220002200202202020200202202000020202202020202202022202020202022 000202020020200
1 = Not Fast   2 = Fast
Fast = 50   Not Fast = 50   Runs = 69

_____
Figure 6
Point of Attack Relative to Ball Placement of 99 Consecutive Football Plays

Play Sequence	Runs Up (right)	Runs Down (left)	Total Runs
RRRLRRLLCRRLLLR RRRRLRRLLRRLRRR LLLRRLRRRLLRLRL RRLLRRRRL CRRLRRLRRRLLRRL RRLRRLRRLRRRRR RLRRRLRRRRRRR	24	23	47

Equation 1

$$z := \frac{r + h - \frac{2 \cdot m \cdot n}{N} - 1}{\sqrt{\frac{2 \cdot m \cdot n \cdot (2 \cdot m \cdot n - N)}{N^2 \cdot (N - 1)}}}$$

where r is the number of observed runs
h is a correction factor for continuity
equal to .5 if r<(2mn/N)-1
or to -.5 if r>(2mn/N)-1
m is the number of outcomes of type m,
n is the number of outcomes of type n,
and   N is the number of trials.

Equation 2

$$z := \frac{\sum_j r_j + h - \sum_j \left(\frac{2 \cdot m_j \cdot n_j}{nn_j}\right) - 1}{\sqrt{\frac{\sum_j \left[\frac{2 \cdot m_j \cdot n_j \cdot (2 \cdot m_j \cdot n_j - nn_j)}{(nn_j)^2 \cdot (nn_j - 1)} \cdot nn_j\right]}{\sum_j (nn_j - 1)}}}$$

where r is the number of runs,
j is an index for the series of trials,
m is the number of outcomes of type m,
n is the number of outcomes of type n,
nn is the total number of trials,
and h is a correction factor for continuity
calculated as .5 if

$$\sum_j r_j < \sum_j \frac{2 \cdot m_j \cdot n_j}{nn_j + 1}$$

or as -.5 if

$$\sum_j r_j > \sum_j \frac{2 \cdot m_j \cdot n_j}{nn_j + 1}$$

Equation 3

$$z := \frac{\dfrac{r - n \cdot \left[1 - \sum\limits_{j} \left(p_j\right)^2\right]}{\sqrt{n}}}{\sum\limits_{j} \left(p_j\right)^2 + 2 \cdot \sum\limits_{j} \left(p_j\right)^3 - 3 \cdot \left[\sum\limits_{j} \left(p_j\right)^2\right]^2}$$

where r is the number of runs,
n is the number of trials,
p is the proportion of outcomes of type j,
and j is the type of outcome.

Equation 4

$$z := \frac{\dfrac{r_j - n \cdot p_j \cdot \left(1 - p_j\right)}{\sqrt{n}}}{p_j \cdot \left(1 - p_j\right) - 3 \cdot \left(p_j\right)^2 \cdot \left(1 - p_j\right)^2}$$

where r is the number of runs of type j,
j is the type of outcome,
p is the proportion of outcomes of type j,
and n is the total number of trials.

Equation 5

$$z := \frac{r + h - \dfrac{2 \cdot N - 1}{3}}{\sqrt{\dfrac{16 \cdot N - 29}{90}}}$$

where r is the number of runs,
N is the number of ups and downs,
and h is a correction factor for continuity
equal to .5 if

$$r < \frac{2 \cdot N - 1}{3}$$

or to -.5 if

$$r > \frac{2 \cdot N - 1}{3}$$

Software for Analysis of Quantitative and Qualitative Evalutation in Real Time in Basketball

S24

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1. Presentation

Currently there are few instruments that allow head coaches to gather objective information in real time about players' motor actions (technical-tactical gestures and tactical-technical conduct) as they develop during match play.

During training and competition, head coaches must take technical and tactical decisions, basing them on his intuition and experience without the support of objective data. For this reason, it is important to develop indicators for the registration, analysis and evaluation of quantitative and qualitative elements in the practice of sports.

Head coaches usually rely on computer programs to achieve and analyze information once the training or competition is finished. These programs compile quantitative information, showing a descriptive vision of those players' actions that are easily quantifiable, i.e. sport statistics. The data provided by these programs only allow head coaches to analyze the data after the fact and take posteriori decisions, i.e. post-active decisions. Head coaches have traditionally solved this problem by making their assistants collect specific qualitative and quantitative information from the sidelines during training or competition.

In the last decade some computer programs which have tried to analyze players' actions in collective sports have been marketed (Data Training Basketball; "Diseño, análisis y archivo de situaciones tácticas y estratégicas en baloncesto"; "Scoutbasket; Análisis de los gestos técnicos y acciones del juego en baloncesto", etc). The first and second programs provide support for the head coach's work, by managing the databases of exercises and making a theoretical analysis of the training programmed by the head coach. The other two programs are useful for making statistical studies of the actions developed during match play, but focusing on indicators that can be easily quantifiable (points, blocks, rebounds, etc).

Integrated systems (hardware and software) have also been developed to collect larger amounts of information and analyze it in real time (Grosgeorge, 1990) by using small personal computers.

The mass media are the most interested in obtaining objective data for use in color commentary, which explains how the media have developed statistical programs for collecting quantitative data (shots, effectiveness, fouls, etc) in real time.

The computer application that we present here is an attempt to advance in the development of these instruments, allowing for the compilation, analysis and evaluation of the players' actions in real time. Our aim is to try to help head coaches to take inter-active decisions, by providing them with information on variables that traditionally have depended on mere subjectivity (technical and tactical actions that conventional statistics do not collect, sequence and effectiveness of the game systems, etc), making possible the quantification and analysis in real time.

In order to develop the program, we have objectively established several indicators which allow the information demanded by head coaches during the training or competition to be collected in real time. Once the indicators were validated we proceeded to design and create the instruments (hardware and software) for compiling the information, analyzing it and passing it on to the head coach during the training session or competition.

In the assessment of the actions of a player or a team we have included two kinds of variables: quantitative and qualitative. Quantitative variables are those actions which we understand to be easily quantifiable and which have traditionally been registered in conventional sport statistics (number of passes, number of throws, percentage of skills, number of rebounds, number of fouls, etc.). We understand qualitative variables to be those not included in conventional statistics, those which have an effect on the development of match play and head coaches' assessments of player's performances, adaptation of technical-tactical gestures (rebound blocks, defensive assists, etc).

The recording of players' actions during the development of a basketball game, for example, entails several problems, mainly due to the speed at which the various actions to be recorded occur. In order to solve this, several different people must be involved in the collection of information, each one of them specialized in a different phase of the game, for example one in offence and one in defence, each of them assigned to one team, and all of them must co-operate to collect all the information without any being lost.

It is necessary to create a complete work team in order to collect as much information as possible and transfer it to the head coach, in order to help in analyzing and taking the appropriate decisions.

We have sought to design a user friendly data entry screen for the analysts to enter information, as well as user friendly data presentation screens for the head coach to use in order to analyze the data during the development of match play.

2. Characteristics of the program

The program allows for a wide range of flexibility in the application, not only in the hardware needed but also in the configuration of the software. We must take into account that some head coaches do not have at their disposal either enough assistants to use the different programs on the market nor the necessary material resources.

The application can be utilized by a single user (absolute minimum), who observes and records the information. In this case, the number of variables to be registered would be less than the number registered by several users simultaneously. However, the application has been designed with a team of several data entry users, or data analysists, in mind, two for each team to be analyzed. Ideally, this group of data entry users would be completed with one observer for each analyst. It is the observer who must identify all the player's actions, and transmit them to the analyst, who will introduce the information in the computer.

When there are several users working in co-operation, it is necessary to use laptop computers, which are all connected to a central computer, which then records all the information processed by the different analysts (Figure 1). The head coach will use the central computer to analyze the information and take decisions, using the statistics generated from the data collected from the variables.
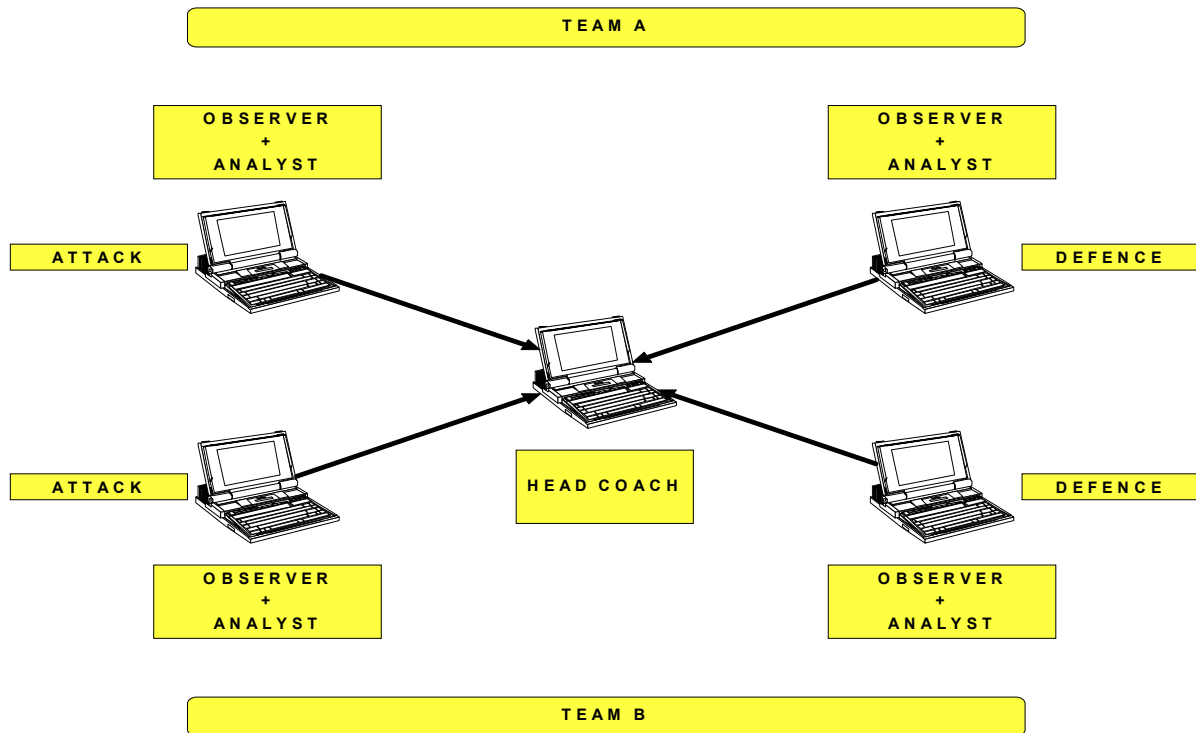
The program consists of a database, which is located in the central computer. This database can be used and updated by all the users. If the application is being operated by a single user, the database will be located in the single user's computer, without any other requirement. TCP/IP protocol is required to connect the computers running this application and all of them must be equipped with a network card. For optimal connection between computers network cards that transfer information through radio waves, rather than network cards that use cable connection are preferred, though this connection implies a notable increment in cost.

This data entry system has been mainly developed to work with a mouse, but the system may also be optimized by using other data entry devices, such as touch screens or graphics screens. These modifications increase speed in the processing of the information, although, as we said above, due to the speed of the actions ultimately the number of analysts will be most significant in improving the effectiveness in the use of the computer application.

The program is clearly divided in four parts: the first part for program configuration, the second for data entry, the third part for data correction, and the fourth for statistical analysis (Figure 2).

Figure 2
Parts of the program
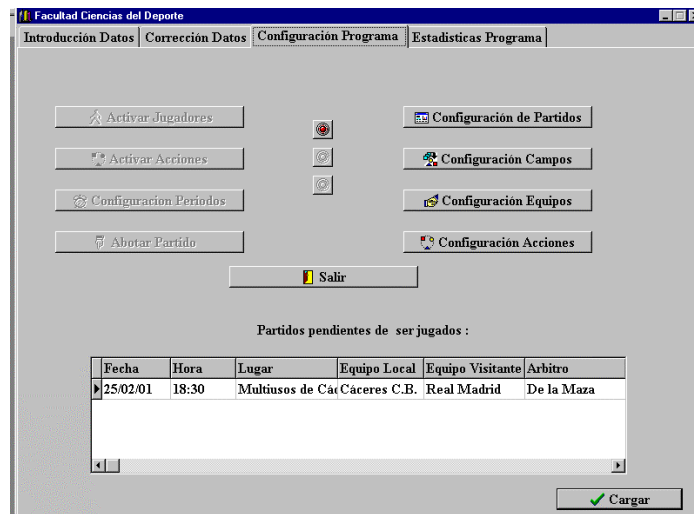
Once the program has been configured and we have introduced the information about the game we wish to analyze, the central computer will activate the screens that allow for the analysis of the information, while the computers connected to it will activate the screens used for data entry.

2.1. Configuration of the program

The head coach will configure the program depending on his own interests and possibilities of application. The first step is the introduction of data regarding the play we are going to analyze. We must register the date, place, referees, teams, players and the kind of court (Figure 3).

The possibility of selecting the kind of court is one of the most novel elements of this program, as the same application could be used for various different sports, without acquiring new software. The configuration allows us to divide the court into different parts, or "courtgrams" so the analysis of the actions can be more precise (Figure 4).
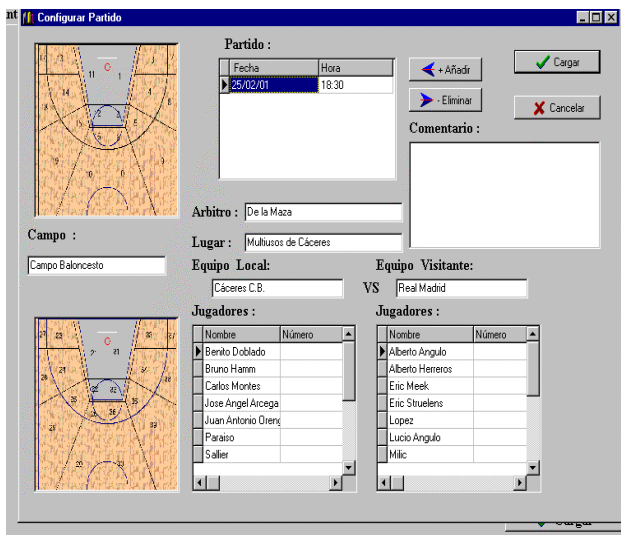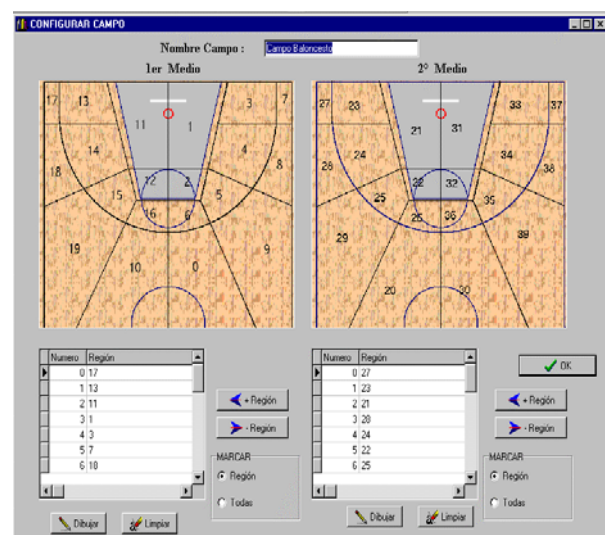
Figure 3
Configuration of the play

Figure 4
Configuration of the court

The division of the court into different parts is flexible, as each the head coach will be able to design his own zones of play and to store as many courts as he wishes and as many courtgrams as he needs. Each of the variables registered in the program will indicate the zone of the court in which each specific action has happened.

All data about a new team that we enter in the program can be registered (Figure 5). The configuration of the team members may be modified throughout the season. When this happens, the program allows for the modification of the data for each team member (Figure 6). The program also allows for the inclusion of remarks, both about the team and about the different players on it (Figure 7).

Figure 5
Configuration of a new team
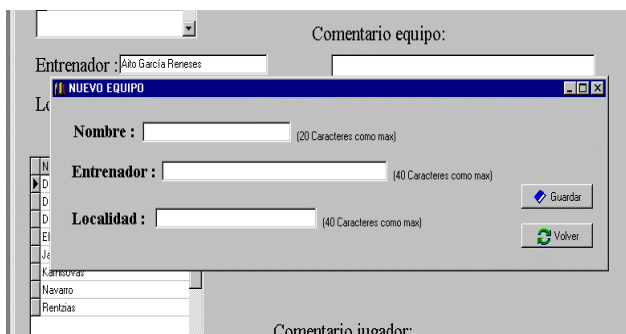
Figure 6
Configuration of a player
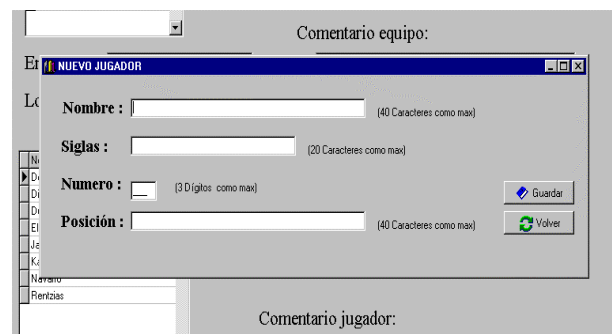
The length of play is another of the variables that must be configured before the analysis. The analysts must establish the periods for each of the sports to be analyzed, as well as the playtime. The program indicates the time in which each registered action happened. The time can be configured as positive (upward count) or as negative (downward count) (Figure 8).

Once the teams have been configured, we must proceed to the configuration of the actions, i.e. the variables, to be analized and registered. The flexibility in this part is also one of the singular characteristics of the program. The head coach must configure the different actions he wants to analyze, as well as which one will be used in each play.

Figure 7
Comments about teams and players
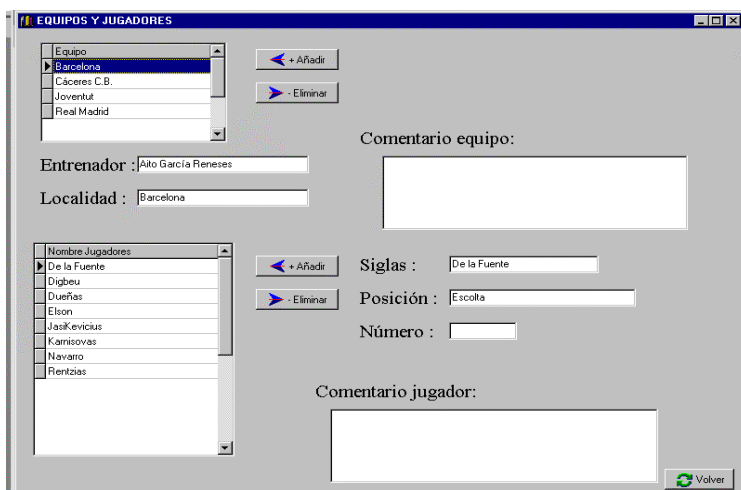
Figure 8
Time configuration
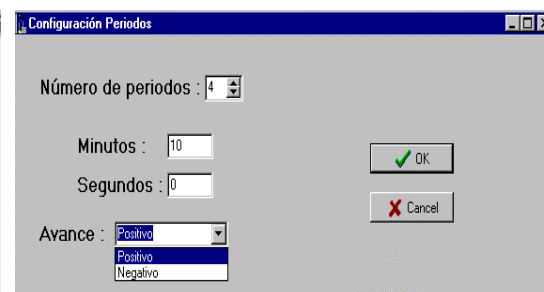
These actions are grouped according to whether they are in offence or defence. Each group of actions will be observed and registered by a group of analysts.

Coaches, must not only select the variables they wish to register (quantitative or qualitative), but they must also set the value they assign to each one of these variables (positive and/or negative), and its quantification value (1 point, 2 points, 3 points, etc.) in order for the program to subsequently be able to set a more precise assessment of players' and teams' actions (Figure 9).

The activation of every action to be observed will be made with those which have previously been loaded and defined in the program. Game analysts will activate the variables that refer to the stage of game they observe, whether in offence or defence (Figure 10).

Figure 9
Configuration of actions
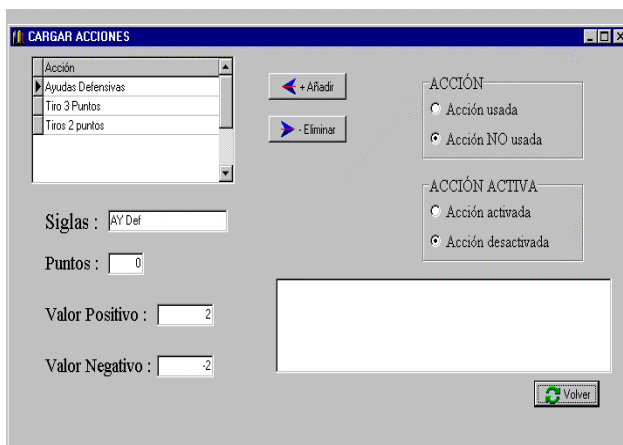
Figure 10
Activation of actions
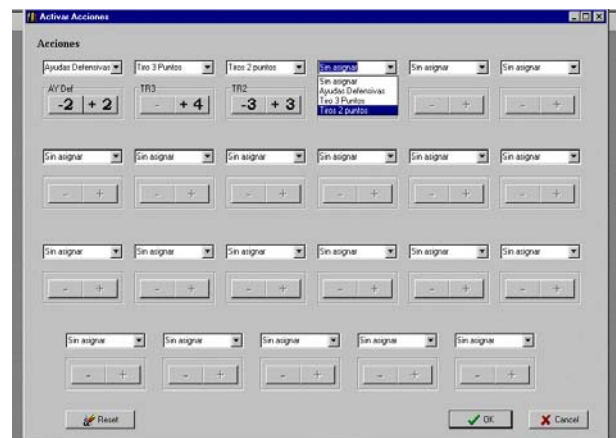
The last step in the configuration of the program will be the activation of the players that take part in the game to be analyzed. This selection will let us obtain the individual results of the players that play a game, as well as the games they play.

Figure 11
Activation of players

After the configuration of the program, we can introduce the data. Every group of analysts will have the screen activated with those players to be analyzed (one team or two teams), its specific courtgram (offence or defense), and the game actions to be observed and registered (Figure 12).

As we can see, the screen is designed so that only one analyst can introduce the data, two analysts (one for the offence and one for the defence for one team), or four (one for team A offence, one for team B offence, one for team A defence and one for team B defence). The greater the number of analysts, the greater the number of variables to register.

Figure 12
Data introduction screen
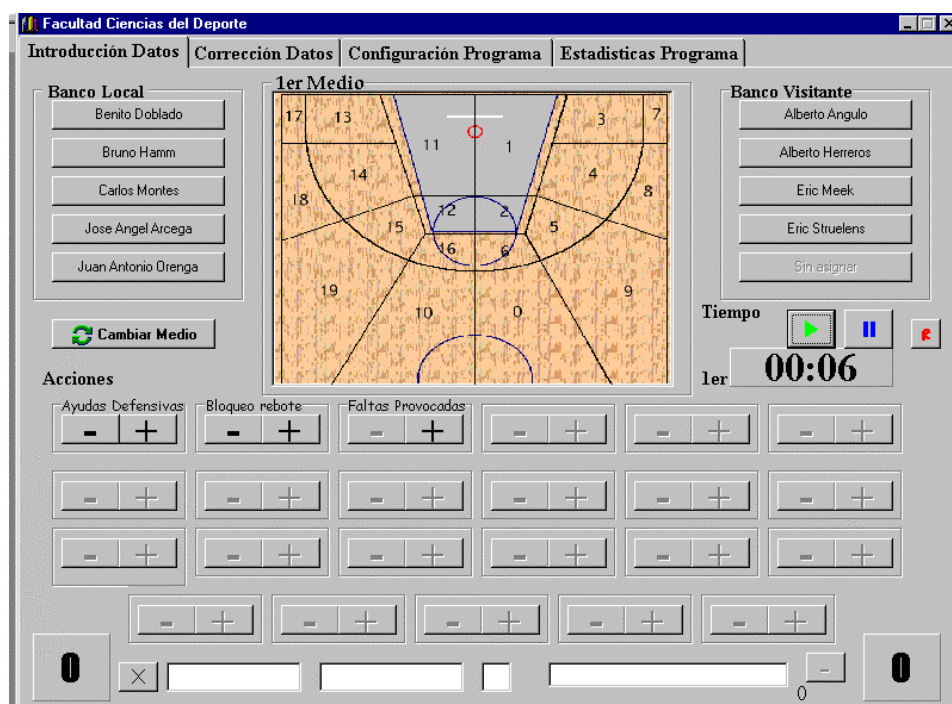
The data entry is activated when the game time is running and is deactivated when the game time stops. The record of each action is made by clicking on the player that carries it out, the area of the court where it occurred and the variable that is observed. These three details are associated and allow us to introduce a list of temporal actions. The order in which these three details must be introduced is not predetermined. It is necessary to introduce these three details in every action, if not, there will be incomplete data sequences which must be completed later.

The introduction of quantitative variables (points), allows us to tally the scoring. We can set a graphic sequence of the development of the score of the game. This function is more stressed when the level of competition is lower since there is sometimes no scoreboard in lower categories.

2.3.   Data correction

If, when introducing data, any errors are detected, the system allows us to correct them. In order to do so, analysts should open the errors screen and replace the wrong data with the correct data. Corrections may affect players, court areas, actions and game time. The graphic structure of this screen is similar to that of the introduction of data.

The replacement can be carried out in real time or later, making use of the intervals that take place during the course of a game.

2.4.   Data analysis

The data obtained can be analyzed during the course of a game or later. Likewise, if the data analysis is carried out after the match, the scores from other games can be added.

During the course of a game, coaches can activate three different types of screens in which the data registered up to the moment of the checking are recorded (Figure 13).

Figure 13
Data analysis screen

On the one hand, we can obtain the individual results for each **player**. As a sequence of three variables (player-action-court area) have been entered at the data entry points, the presentation allows us to analyze, by means of charts, the recorded actions of each player on different areas, or the actions at the exact time they took place. Every recorded action (variable) has a value (positive or negative) and a quantification (1, 2, etc.) that the head coach sets before the implementation of the program. When all of this data is added, the program allows for a real time valuation of the participation of each player in the game.

On the other hand, we can view the **team** results. In this case, the data entry chart displays the players that have carried out some of the variables already set. We can also get a valuation in real time of the performance of the team.

Finally, we can check the **actions** we have already set. Once again we can select two types of presentations. We can watch the players that have carried out some of the actions during the course of the match or we can view the court areas where these variables are registered.

The amount of information the head coach can get by changing the data information screen and by observing the objectivity of the data it contains is considerably greater than the data collected using traditional methods, and it may provide for higher performance of the team by allowing the head coach to take decisions that are more attuned to the realities of the match.

3. Conclusion

The design of the program has been carried out with the aim of collecting information about the actions of the game in team sports.

This instrument aims to increase and improve the information head coaches get during the course of a game, so that they can take decisions with the help of objective data. Furthermore, we have sought for the analysis of the information to be in real time during the course of the competition, thus improving the inter-active decision-taking process.

The amount of information we can collect varies according to the number of observers and analysts we have. For a better use of the possibilities of the program, we recommend the creation of a team to help the headcoach with this task.

One of the features of the program is its flexibility. The program includes the introduction of variables that can be personalized by the head coach such as the court, the court areas, the quantitative variables, the qualitative variables, the attack variables, the defence variables, the valuation of variables, etc. Furthermore, time periods can be set, so that the program can be adapted to several sports. This flexibility allows for fast adaptation to the current rules.

Another feature of the program is the inclusion of qualitative variables in the valuation of the players during training/competition. We refer to those technical-tactical gestures or tactical-technical conduct which do not appear in traditional sport statistics and which good coaches appreciate, and what is more, they let players with not very good statistics remain in the game for longer.

The entry of a larger number of variables to analyze, both quantitatively and qualitatively, together with their quantification, lets us assess the players in a more accurate way, which is more attuned to reality.

With this program, we can also view the game events in a different way: according to a player, a team, actions and in real time. All the data obtained will be stored for a later analysis.

The future works are aimed at the improvement of devices related to teams. In particular, improvements will be aimed at making the program easier to transport and operate for use inside sport centres by removing the need for cable connection of the equipment. Likewise, the data entry devices are one of the applications which could be optimized and which we will keep on working on.

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Maps at the Service of Sports Information
S24

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For some time now, we have been part of the information society. Generating, handling and managing data has become of critical importance in a large number of sectors. Our society is transforming itself gradually into a society of "leisure and shows", with the amount of time devoted to working decreasing regularly. In these conditions, sport is emerging to become an economic activity in itself. Integrated into the basis of the information society, sport is not escaping from the developing interest of the media.

Sports information represents an important economic sector - one only has to follow the inflating prices of television transmission rights of sporting events, be it the Olympic Games (which, along with the Football World Cup, is the only truly world-wide event), or be it major national football championships. Live transmission of sports events has become one of the major selling points of commercial television channels (both cable and satellite). The level of interest in sports events can also be measured by the amount of time devoted to transmission of sports on television, or by the circulation of daily sports newspapers (according to *La Lettre de l'Economie du Sport*[1], the circulation of the main daily French sports newspaper, *L'Equipe*, increased by 70% between 1988 and 1999). The amount of air time devoted to sports on the main national Hertzian channels increased by 15% in the period 1996-1999, compared to 1992-1995[2]. The seven best television audiences for the year 2000 were generated by football matches[3].

Finally, the arrival of the Internet has shown, as if there was any need to, that sports information is economically very important. The multitude of sites dedicated to sports (the supply) translates a huge demand on the part of Internet users. The records for site hits are regularly beaten during large sports manifestations (e.g. 7.2 billion hits on the official site of the Sydney Olympics). We hypothesise that this sports information could be exploited better by means of cartography, where suitable.

Indeed, maps present unquestionable advantages for presenting information: the graphic nature facilitates the instant understanding of the message portrayed. Maps also have the advantage of presenting many layers of information ; reading from the most simple to the most complex level, maps illustrate a phenomenon by localising it in space. Cartography can therefore be used to present the most basic information (like the position of the boats in the Vendee Globe Challenge boat race). More importantly, it makes it possible to integrate more complex information while still producing a simple image at the end of the process. A map is the result of an analysis, or of the processing of some data, and therefore represents a vision of reality. We believe that maps could be used in the aim of analysing sporting phenomena, and as an aid to decision-making for sports supervision. In these times of multimedia, cartography has the strong advantage of high communicability.

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[1] *Sports economy journal. La lettre de l'économie du sport* mai 2000, n°528.

[2] *La lettre de l'économie du sport,* according to data from the CSA (broadcasting supervisory body), March 2000, n°520.

[3] *La lettre de l'économie du sport*, January 2001, n°555

Using several examples, we illustrate the contribution of cartography to the processing of sports information, from the most simple to the most complex. Finally, we show that the eruption of Internet and media based on graphic messages (even if it often departs from this basis), is an important support for cartography, taking into account its technical constraints.

Figure 1
The maps used for localisation and itineraries by the media

Downhill Skiing World Championships

Source : L'Equipe 29/01/2001

The Vendée Globe Challenge

Source : L'Equipe 29/01/2001

The Tour de France 2001

Source : www.letour.fr

A mountain stage of the Tour de France 2001

Source : www.letour.fr
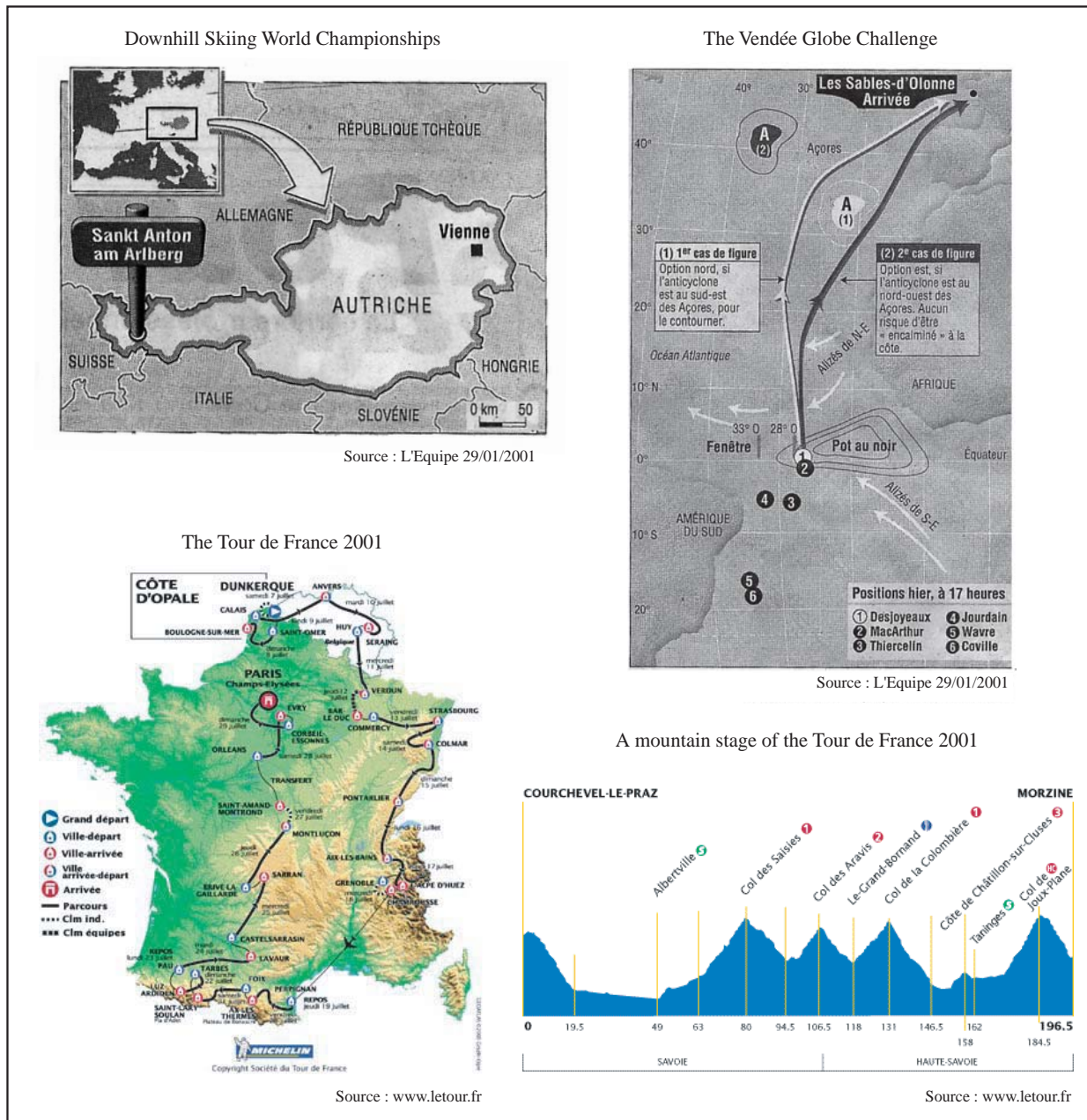
1. Minimal use of the map in sports media

Sports information, and in particular, sports statistics, are most frequently presented in the form of tables, lists, and rarely in the form of graphs. This being so, the visual language is considerably under-represented. In the graphic illustrations, maps are rarely present, and only localisation maps are used.

These latter are used to satisfy the curiosity of readers who wish to locate where a competition is taking place, for example, be it at world level, or within a particular country.

Such a map is purely descriptive and requires no data processing, apart from the graphic aspect. Itinerary maps are the second type of maps sometimes used in the media. These are also descriptive maps designed to illustrate the course a particular sports event will take (e.g. the Tour de France, or the course of one stage of the Tour). This allows the public to estimate the difficulty of the race, once they have some basic notions of geography (e.g. the difficulty of the mountain stages of the "Tour de France").

Itinerary maps can supply additional information when the sports event in question lasts longer than the media coverage - for example, sailing races are a typical example of this. The media coverage of the Vendee Globe Challenge is based on following the position of the competitors' boats, and their geographical position answers the twofold questions: Where are they and in what order ?

In this type of event, maps can usually be seen in all the different media. The following of stages of cycling events on television also often uses this type of graphic support, presenting the position of the cyclists in real time over the course.

Localisation and itinerary maps are therefore the only two cartographic supports used to present sports information. They contain little information, are used for their "aesthetic" value, and at the most, are used to impart information about the classification of the competitors. Their use translates a very fundamental movement in sports information: priority is given to the purely descriptive, the rapidity of transmission of the results (huge battles between web sites that cannot yet transmit images and between television channels for live transmission), and a factual report on what happened in the event. This attitude obviously responds to the demands of the public.

2. Maps : structured analysis

We believe that maps could be used to complement this approach, and that they could provide more than just simple localisation information. Indeed, creating a map involves processing information that supposes an understanding of the phenomenon, and an analysis of the data in order to highlight the most important points. The additional advantage of a map is to make this analysis visible almost instantly (role of perception by images). Furthermore, when accompanied by an accurate and concise commentary, it is the ideal means to convey a message) : the images are a highly effective means of complementing, even replacing a linear message.

The map then becomes analytical. It represents the final result of information processing which consists in voluntarily losing a degree of precision in order to gain in readability and comprehension.

The example of the performance of women in the 100m sprint illustrates this process: at the basis of the data processing is a document containing for every country the national record in the women's 100m, the name of the athlete, and the place and date the record was set. This information is presented in the form of a list by country[4]. This presentation has the advantage of being exhaustive and accurate, but does not allow for a summary on a world-wide level. However, a simple statistical analysis which consists of making the variable "national record" into a discrete variable, will make it possible, combined with the translation into a map, to see instantly the hierarchy between groups of countries in this event.

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[4] Habash F. et al ii (1999) - *National Athletics Records for all countries in the world*, 205 p.

Figure 2
Thematic maps: Athletics example

Women's performances: 100 meters sprint, universal discipline

Performance index

World record : Florence Griffith-Joyner USA 10'49 (1289 points)
Togo National record : Akoua Amégnidou 12'55 (938 points)

The 100m is the most universal discipline. All NOCs that practice athletics
have a 100m record, with relatively homogeneous performances. The practice
of the 100m requires a minimum of technical and training capacities and equipment.
This undoubtedly explains the universality of this discipline.

- International Elite Level
- International level
- National Elite Level
- National Level
- Regional Level
- No national record

© CERSO - THEMA   Sources : National Athletics Records (ed : 1999), IAAF scoring Tables to Athletic

Women's performances: Pole-vault, a new discipline reserved for an elite group

Performance index

World record : Emma George AUS 4m59 (1271 points)
Perou national record : Irina Castillo 3m30 (784 points)

The practice of pole vaulting (a new discipline for women), and the
performances achieved in this discipline, would appear to be reserved
for an elite group of athletes (the richest NOCs, or those with a strong
sporting tradition). Africa and most of Asia are excluded from the practice
of pole vault, which is costly in terms of infrastructure and technical training.

- International Elite Level
- International level
- National Elite Level
- National Level
- Regional Level
- No national record

© CERSO - THEMA   Sources : National Athletics Records (ed : 1999), IAAF scoring Tables to Athletic

This process no longer makes it possible to have the precise time for each country, but it makes it possible, **combined with the interpretative contribution of the person doing the analysis**, to determine levels between countries.

Reading through two hundred records in a table will never give the same image that can be seen instantly on a map.

The same process can be applied to all sporting events. A second map shows women's performance in the pole vault. A visual comparison of these two events shows immediately the difference in the practice of these two disciplines, and the status of their distribution. In this particular case, the maps used supply additional information: it can be clearly seen by all that the position of a place is not neutral, and that many phenomena respond to a direct or indirect spatial logic. The distribution of pole vaulting records illustrates the spatial configurations which draw on other variables.

An analytical map is the result of statistical processing and translates the hypotheses elaborated by the person who made the map. Therefore, it often raises many questions, piques curiosity, and represents only one stage of development. In our example, a first perusal of the distribution of pole vault gives food for thought: Does this map not also translate an indicator of development ? If this map was compared to a map of the Human Development Index, one would probably notice several similarities. And is this not logical ? Is sport not a reflection of society ? The two can not be separated.

The question of the number of women athletes present at the Olympic Games in Sydney is a very topical subject. We believe that the use of cartography in the analysis of this situation could have thrown an interesting light on the subject.

A first map by class showing the proportion of women would show visually the level of representation of women athletes. A second map could have enlightened even more with a more detailed analysis, and a simple message: distribution by class describing the over- or under-representation of women compared to a mean (global, or by continent); this would have shown the spatial distribution. Indeed, a further, more precise description could have been used to show the countries without any women athletes, countries where women were under-represented, over-represented, equally represented, or indeed countries with only women athletes. The rate of representation could be fixed according to a mean, or to equal representation. Finally, a comparison between the situation at the Atlanta Olympics, and the Sydney Olympics would have completed the analysis, and would have allowed to weight certain judgements. In this way, it would have been noted that Senegal, which didn't have many women athletes in its delegation, had nonetheless greatly improved its representation, since no women athletes at all were present in Atlanta.

This example shows the plethora of possibilities for processing data from a relatively simple phenomenon. Every map gives an image of reality, or rather, the interpretation of reality. None is more right or wrong than the others, each map corresponds to a particular problem, and a message. The language of cartography is not just technical mastery, but implies a certain degree of reflection, and knowledge of the phenomenon and its interpretation. Just like every other type of document (from speeches to images), a map is designed to convey a message.

However, the fact remains that maps representing sports information are rarely to be found in the mass media. It has to be said that they are more aimed at processing phenomena which have no immediate link with the descriptive and eventful aspect of competitions.

Figure 3
Representation of women at the Olympic Games in Sydney

Proportion of women athletes in the delegations of each NOC in Sydney

- ☐ no female athlete
- less than 15 %
- 15 to 34 %
- 35 to 49 %
- more than 50 %

Sources : SOCOG   ©cio/dpt.cno-cerso-2000

The over-representation of women athletes in delegations

- >10
- 159
- 317
- 634

- No female athletes
- Over-representation of male athletes
- Female presence close to the average*
- Over-representation of women

*The relative mean was 38% of women per delegation

Sources : SOCOG

Evolution of the percentage of women athletes in the delegations between Atlanta and Sydney

- Increase
- Delegation composed entirely of men at Atlanta, but including at least one woman in Sydney
- Stable
- Decrease
- Delegation composed entirely of men in both Atlanta and Sydney

Sources : CIO - SOCOG   ©cio/dpt.cno-cerso-2000

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Figure 4
Typological map : an important tool for summarising

IAAF scoring table of athletics   Women national record

Source : IAAF Scoring tables of athletics   Source : National Record 1999

Sporting excellence in women's athletics *

■	International elite level in all disciplines
■	International level with at least one elite athlete
■	International level in some disciplines
■	Moderate level with at least one elite international athlete
■	Moderate level with at least one international athlete
■	Moderate level in all disciplines
□	No national record

* except heptathlon

© CERSO - THEMA   Sources : National Athletics Records (ed : 1999), IAAF scoring Tables to Athletic

However, we believe that on the occasion of large sporting events, the presentation of document with a more long-term vision could greatly enrich the perception of the readers. A map can be read on several levels and could therefore interest a wider public.

In another domain, such documents could be used to good measure by sports representatives. In the framework of knowledge of their sport (notably as regards practises and results), analytical maps can be very effective as a means of reflection and communication.

3. Maps as an aid to decision-making

Analytical or thematic maps can shed light on a problem. From there, it is sometimes possible to go one step further and use the information in the map as an aid to decision-making. The following two examples illustrate this :

1) The first map is a typological map showing, as the name indicates, the typology of female athletics in the world. It is based on the information published in the *National Athletics Records for All Countries in the World,* transformed from the quotation tables in the IAAF Scoring Tables of Athletics[5]. In this particular case, the problem at hand is to try to characterise the global level of female athletics by country, and using the IAAF tables makes it possible to evaluate every record and make them comparable. The sum of the different records then translates the overall level of each country in athletics. Finally, this sum is adjusted to take into account the different variations encountered - the same score can be reached by means of many different combinations (e.g. one exceptional athlete who gains many points and several mediocre athletes, or several very good athletes together, etc). Athletes of very high level have to be taken into account.

   This map presents a global appreciation of the levels, and illustrates an appraisal on the basis of which it could be possible to start reflecting seriously. It could be supplemented by thematic maps such as those above (100m or pole vault) to show the strong and weak points of each country.

2) The second map was used in the development of the urban development plan for the agglomeration of Besançon (France)[6]. In the framework of an analysis of the distribution of sports equipment and practising sportspeople, this map presents the strong and weak points in the sports previsions for the area. It was presented to the elected officials in charge of making decisions about future sports policy in the agglomeration. The map and its information was taken into account by the politicians in their decision, and was used as visual support to convey a message. The first proposals for sports provisions aimed at remedying the imbalance have been superimposed onto this map.

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[5] Spiriev B. (1998), *IAAF scoring tables of athletics*, IAAF, 300 p.

[6] CERSO (1998), *Les équipements sportifs dans le Schéma Directeur de l'agglomération bisontine*, Université de Fanche-Comté, 85 p.

Figure 5
The map as a diagnostic element

Elements of the diagnosis

The socio-economic context

Sports facilities

Sports practised

Strong and weakpoints in the sport facilities offered to the agglomeration

Attractive centers

Center complete with sports facilities and events

Secondary center equipped with various sports facilities

Complementary centers equipped with various sports facilities

Sense of attraction

Diagnosis of potential of sports facilities

Well equipped Zone

Poorly equipped Zone

Zone strongly integrated into the dynamics of Besançon town

Area where inter-communality plays a strong role in integration

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We would like to finish by speaking about the place of the map in sports information, focusing our attention on Internet, the new media. As seen in the introduction, sports information has carved an important place for itself on the Internet. However, its presentation remains very classical, and most relies on text, which is a paradox when one considers that Internet is a primarily visual media.

On some websites, maps are sometimes used as a graphic support for navigation (e.g. the SOCOG site during the Olympic Games) - you can click on a continent to have access to the list of countries and their statistics. This presentation would appear to us to be more effective than lists of countries. Indeed, it has a more pleasing aspect, which can be greatly improved (see map), in that people visiting the site often click on countries that they don't necessarily know at the outset, something which they do far less often with lists.

Figure 6
Maps on the Internet : a graphic and interactive language
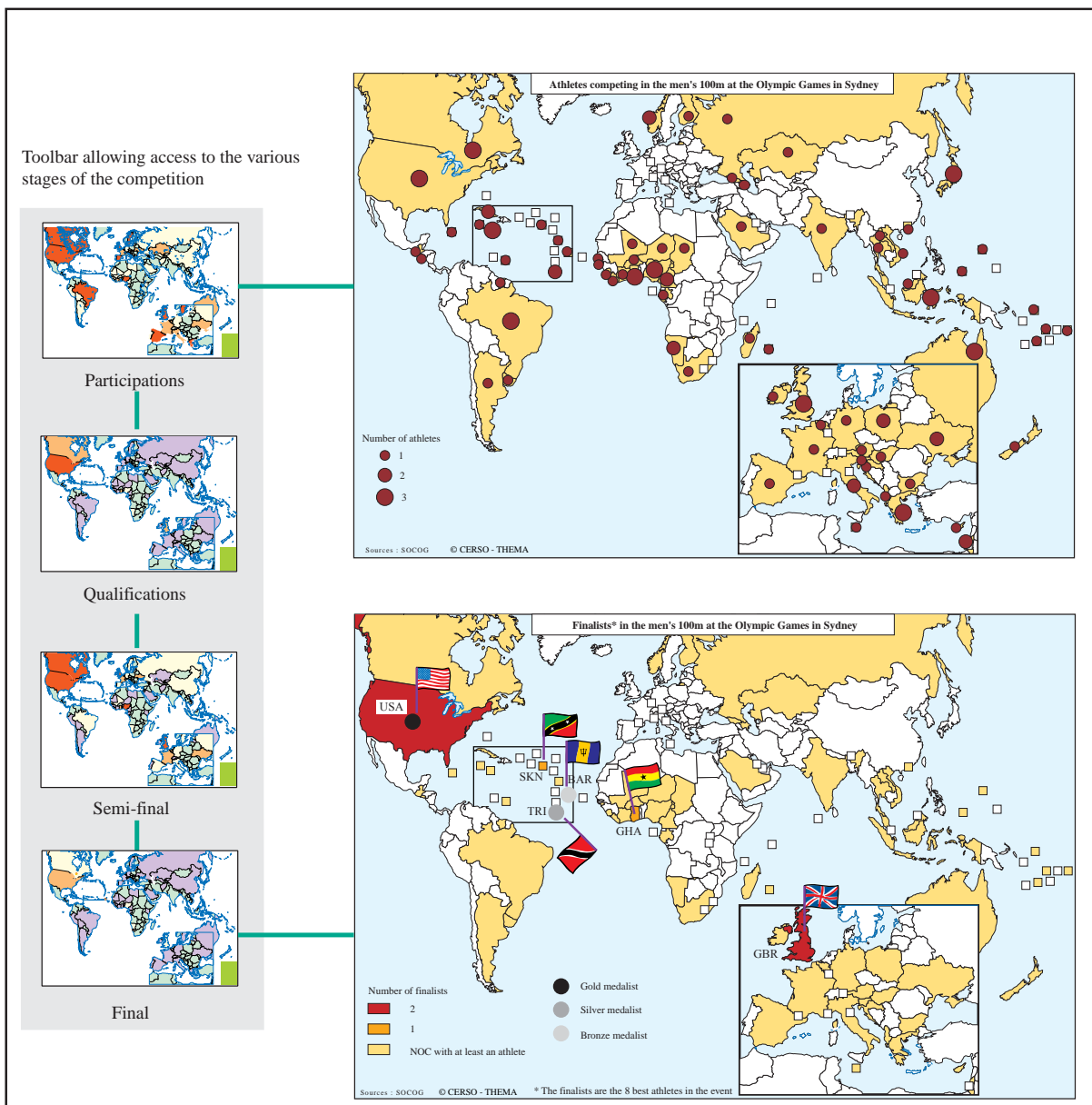
We believe that the interactivity of sites could be better exploited, especially as regards the presentation of the events. The concept consists of using cartography to represent the participation of every country for every event, and to use such a map for every round of the competition. The Internet surfer could then, at their leisure, visually compare the presence of every country, and would perceive the process of elimination over the course of the competition. This comparison is rendered relatively easy by maps, but is practically impossible using lists of countries.

Never has so much sports information been generated. However, this information remains exploited mainly in its most descriptive and immediate form - the presentation of an event and an analysis thereof while the event itself is going on "live", or else a short summary directly afterwards. This method corresponds to the demands of the public, namely the desire to experience the event live, to share the excitement and the exploits of the sportsmen and women (television, radio) or to be kept informed of the latest results (written press).

It would seem to us that in parallel to this procedure, the use of maps that are analytical and not simply descriptive in nature, could be possible. Thanks to their graphic nature, such maps are easy to read and can put many considerations into perspective. Indeed, this process is used during large sports events - Do we not often see summaries of previous events, which are nothing more than a way of bring things into perspective in a more descriptive way ?

On such occasions, maps could be used to show the forces currently present. It would concisely summarise basic tendencies in sport, and even beyond the performances of individual athletes, one would be in a position to perceive more clearly the cultural and political dimension of sport, which, as previously mentioned, is a mirror of our society.

Apart from this descriptive aspect, cartography could also be very useful for leaders in sport who are in charge of management, and who may be active in the political arena. Maps can be used as an effective tool for analysis, and as a support to decision-making. This dimension is not part of the immediate, descriptive aspect of sport, but represents rather the more long-term aspect of overall reflection. Furthermore, it has the advantage of being a basic element for communication - if we take again the example of the assessment of women's athletics, a simple map can translate thousands of different statistics. In a language understandable to all, the map immediately identifies strong points and weak points. It is a simple means to provoke reflection. Nonetheless, maps are not by any means the panacea: they only translate a vision of reality, and it is the analysis, processing and fundamental knowledge of the phenomenon, which, beyond simple technical competence, give maps their relevance.

Specific Sessions
Sports Information and Olympism
Geographic Development of Sports Information
(S31, S32, S33, S34)

Thursday, 26th April 2001

Moderators:

S31:
Ma Tie
Vice-Director of the China Sports Information Institute, China

S32:
Ayala Maharik
Wingate Institute for Physical Education and Sport, Israel

S33:
Erika Schwarz
Head of the Sport Documentation and Information Service, Higher Sport Council, Spain

S34:
Esperanza Bobes
Director of the Research and Sports Information Technology Centre,
National Sports Institute of Physical Education and Recreation, Cuba

Globalisation, Sports Information and Developing Countries Perspectives on Benefits, Vulnerabilities and Affirmative Strategies
S31

Jimoh Shehu

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1. Introduction

In many parts of sub-Saharan Africa, when physical educators and sport officers seek to keep abreast of advances in the frontiers of their profession, they turn to the sports pages of their national dailies. This is not a sign of patriotism or nationalism. Neither is it because of any ideological resistance to a larger bibliographic universe. The fact of the matter is that many of these individuals have little or no timely access to a more integrative and interactive source of sports information. As a result, they learn less about what is going on in their field. Despite globalisation, the quantity of sports information that can be gathered and the place at which it can be analysed and shared has not changed much for those working in the field of sport and physical education in developing countries. While there is a faster and greater sports information flow in the north, some areas of the south have yet to experience the benefits of rapid gathering and broad dissemination of data and information on national and global sports issues.

Why has globalisation produced little diffusion of sport information to developing countries ? How can the growing "sports information divide" be bridged technologically and personally ? In this paper a number of important issues associated with the opportunities and challenges of globalisation are addressed. The paper also discusses key determinants of national innovative capacity "vis-à-vis" sports information and documentation in developing countries and suggests policy options for a dynamic north-south and south-south collaboration.

2. Globalisation: dimensions and character

In recent years, the subject of globalisation has attracted much attention and generated extensive literature (e.g. Waters, 1995; Friedman, 1994; Robertson, 1992; Kay, 2001; Castells, 1994; Maguire, 1999). For the purpose of this paper, it is necessary to provide a working definition as well as a brief summary of globalisation's major components and processes. Globalisation is the differentiated spread or expansion of economic, cultural, and political processes and institutions across national, regional and global arenas. The key components of this phenomenon include:

– Openness or opening up of political-institutional and economic space to facilitate a cross-border flow of ideas, commodities, people, information and finance as well as cross-exchange dealing.

– Spread, flow or diffusion of values, capital, labour, structures, activities and institutions from particular sites to specific locations.

– Close integration, harmonisation or convergence of policy styles, technological processes, social organisation and market norms (as well as spatial differentiation resulting in local particularism).

- Inter-linkages, interdependence and competition among several state and non-state actors (intergovernmental, multinational, transnational, international and national) across three levels of political institution: global, regional and national.

What is immediately evident from the above definition and expatiation is that the norms and values inherent in globalisation are neo-liberal. They entail openness, market relations and mobility of capital, deregulation, rule of law and so on. The fact that globalisation involves the spread of neo-liberal institutions and ideas means that nations with neo-liberal ideology and institutional structure are relatively more likely to benefit asymmetrically from global integration of markets for goods, services and capital. Nonetheless, the opportunities created by globalisation can benefit other nations as well. The potential benefits include:

- Attraction of foreign investment (and retention of domestic capital) for broad-based economic activity and social development.
- Growths in median per capital income, which can help enhance governmental legitimacy and contribute to the consolidation of democratic institutions.
- Promotion of regional development initiatives that can spur a rapid flow of ideas, people and goods, as well as cooperative economic activities and greater economic externalities.
- Emergence and consolidation of pragmatic foreign policies.
- Growth of civil society, entrepreneurialism and intellectual awareness.
- Wider market for trade.
- Improved access to technology.

3.   The challenges and vulnerabilities are more for developing countries

Although the globalisation of neo-liberal creed can galvanise economic and social development across all the countries and regions of the world, the problem of vulnerability is much more serious in developing countries (Qureshi, 1996; Winthrop, 1998; Aron, 2000). To be sure, not all the problems of developing countries have been caused by globalisation. However, the projects of globalisation tend to exacerbate existing social and economic conflicts in developing countries by affording nation-states little or no time for modification of existing institutional structures as social, economic and cultural conditions warrant. The institutional, geographic and historical factors responsible for the weak and slow globalisation of many developing countries include:

- Colonial Heritage: Most developing countries have had little or no experience of democracy. The colonial systems were very authoritarian and post-colonial governments gave little or no access to the public participation, civil liberties, accountability and institutional reform needed to get globalisation underway.

- Propensity for Social Unrest: Attempts at post-colonial democratisation and the creation of a new economic system have tended to clash, thereby throwing off the process of political transitions, economy reform and integration into the global economy.

- Policy Regime: Many developing countries operate inward-looking policy regimes, i.e. they adopt trade and investment policies and bureaucratic arrangements that are not conducive to openness, security of contract and economic stability - a situation which inevitably provokes damaging flights of capital and talent.

– Technological Disadvantage: Developing countries rarely have the experience, financial resources and human capital needed to develop technological capability or to manage technical change. The causes and results of this problem include a lack of highly skilled and educated labour and a lack of institutional structures and linkages needed to identify, modify, assimilate and use foreign technology or create it locally. The upshot is that these countries are unable to benefit from technology spillovers or win out in terms of innovation, productivity and competitiveness.

– Location: Many developing countries are landlocked and have a harsh tropical climate; lack sufficient investment in transport and communication infrastructures; have a relatively poor distribution of social and human capital; suffer from population pressure, resource scarcity and mass migration; and are enmeshed in local values and practices that emphasise non-market, obligated social relation. All these factors tend to affect the relative profitability of local and foreign investment, the flow of ideas and technology, and the location of capital needed for productive economic activity and distribution of man-made resources.

Without doubt these issues are more surface frequently in contemporary discussions of developing countries. The purpose of elaborating upon them is to bring into relief the importance of context and spatial characteristics when interpreting or judging patterns of sports information and documentation programmes in different regions and locales.

4. Globalisation and sports information

If sport is a global cultural interchange with economic, political and personal dimensions (Maguire, 1999), then it follows that globalisation can affect the way sports information is diffused and institutionalised across local and global sites. For example, globalisation, or at least its technological and financial features, holds the possibility of providing public and private users of sports information with the following benefits:

– Instant and relatively cheap access to the world's store of sports information essential for research, scholarships and professional development.
– Exposure to alternative norms and policy choices for framing sports information and documentation debates.
– Opportunities for collaborating nationally, regionally and extra-regionally to develop the necessary human and physical capital for sports information research and development.
– Links to international funding sources dedicated to the development of sports information infrastructure.
– Insights into the best evidence-based ways to programme physical education and sport.
– Opportunities to leapfrog stages of development in building sports information infrastructures due to lower market entry barriers for acquiring computer-mediated (electronic) networks.

Having said that, a caveat must be immediately mentioned as well. To reap the benefits of globalisation a number of basics must be put right. In other words, the opportunities offered by globalisation are not likely to translate into desirable outcomes if there are factors that impede domestic receptivity.

5. Political economy of sports information and documentation in developing countries

National sports information and documentation activities are not only economically-driven but also consist of changing relations of power. In other words, the allocation of scant resources to sports information does not occur in an institutional vacuum. Rather, it is a matter that often requires recourse

to values and politics. The ways in which the discourses of physical education and sports are produced and debated by policy actors can create or decrease the possibility of any intervention to transform a nation's system of sports information and documentation. It is the images of physical education and sport in the eyes of a nation that provide the decisive impetus to discourses of sports information, rendering them, so to speak, "popular".

In many developing countries, issues pertaining to physical education and sports within and outside school contexts are generally accorded low priority (Hardman, 1996). Evidently, the interplay of economy (insufficient and inefficient allocation of resources for education and cultural activities) and the politics of physical education and sport serve to discourage or delay sports information and documentation projects. The spatial or geographical factors should also be fore-grounded here. Sports informatics have been slow to unfold in sub-Saharan African countries, partly because technological knowledge is to a substantial degree local, not global, as the benefits of foreign spillover tend to decline with distance (Keller, 2000).

6. Promotion of sports information innovation in developing countries

Sports information innovation may be defined as the specific institutional arrangement which supports the accumulation, diffusion and implementation of technical solutions to both old and new problems of making sports information resources available to users. The institutional arrangement referred to is not just concerned with in-house functions of a library or a sports information centre. Such a view would be too restrictive, especially for the present world situation where global interconnection is the norm. What is meant here is the kind of institutional arrangement that entails both intra-organisational and extra-organisational linkages and communication.

As mentioned in previous sections, developing countries face the unprecedented challenge of creating an environment that is conducive to social, political, economic and infrastructure reform. Thus, the most important policy question confronting these countries is how to increase their innovative capacity. If this interpretation of the situation is correct, it follows that any proposal for achieving effective management and dissemination of sport information in the south should take full account of the factors shaping the national system of innovation.

A recent scholarship body underscored the importance of systemic and structural features of society in driving the process of discovery and innovations (Brisson, 2000; Bartholomew, 1997; Mutula, 2000; Aw and Batra, 1998; Soete and Arundel, 1995; Rothwell, 1992; Lenton and Garces-Restrepo, 1995; Braa, Monteiro and Reinert, 1995). According to findings which have emerged from the research, the relatively nuanced set of factors which drive innovation throughout the economy include:

- Availability of a mixture of general as well as more focused policy tools to guide innovation.
- Adequate spending on basic and applied research.
- National tradition of scientific education which provides a steady flow of people, trained in scientific methods and familiar with state-of-the-art technology in their areas of expertise.
- Extent of technological accumulation and utilisation.
- Openness to external ideas and influences.
- Mobility of research and development (R & D) personnel between research institutions and various sectors of the economy.
- Cross-border R&D alliances for gaining access to the stock of knowledge created by other nations.
- Performance assessment and feedback mechanism.
- Favourable microeconomic climate and competitive environment conducive to introducing new techniques.

In certain crucial ways, the determinants of innovation that researchers have identified are tied very closely and directly to political and educational systems, suggesting that knowledge and learning are as important as political will to stimulate innovation and promote equitable diffusion and effective utilisation of knowledge. Thus, patterns of innovation in different regions and sectors are correlated with patterns of politics, culture and economy which the education system both expresses and influences.

What evidence there is about the determinants of innovation suggests that national sports information and documentation activities in developing countries can be transformed through **regional networking, cooperative collection development, education and training of sports information professionals, policy-relevant research, public-private partnership; organisational support (funding, supplies and materials), technology-based services; telecommunication infrastructure development, monitoring and enforcement of organisational performance; and access to a wealth of experience from around the world about what works and what does not.**

7. Globalisation assistance

What assistance can developed nations and international organisations render to developing nations to enable the latter to develop appropriate sports information and documentation systems ? To be clear: some of the factors for stimulating innovation nationally (e.g. sound macroeconomic policies, rule of law, education reform, civic trust and political stability) are outside the purview of international aid. Nonetheless, there are a number of things within the power of developed states and donor agencies that can help to foster the promotion of sports information and documentation in poor countries. Particularly compelling are the following:

– Concessionary provision of computing and telecommunication technology to physical education and sports departments and sports information centres in developing countries.

– Facilitation of policy-relevant research to Third World sports information professionals and sport science specialists.

– Promotion of north-south and south-south exchanges between sports information professionals through seminars, symposia, peer networking, meetings and on-line workshops.

– Strengthening of the institutional capacity of universities in the south to create and manage sports library and information facilities.

– Financial grants (matching, block or geared) to support innovative sports information and documentation programmes, both existing and potential.

– Knowledge transfer, which may take the form of equipment donation, as well as allowing Third World sports information professionals increased access to digital databases, print-based materials, and tacit (non-codified) information held in the minds of individuals (researchers, librarians, technicians, mentors and peers) in the north.

– Support for local training courses focussing on information search-retrieval tools and processes, communication skills, electronic mentoring, international cooperation, documentation, library and information management and planning, printing and publishing, and development of e-learning programmes.

– Technical and financial support for local degree programmes in physical education and sports studies disciplines, which are currently underdeveloped in the South.

The past eight years of Norwegian assistance towards the development of physical education and sport studies at the University of Dar es Salaam (UDSM), Tanzania, provides a case in point. Prior to 1991 shortage of resources prevented UDSM from putting physical education studies firmly on its institutional transformation agenda. Early 1991 saw the culmination of a lengthy period of policy dialogue and joint programme planning by representatives of UDSM and the Norwegian University of Sport & Physical Education (NUSPE). The technical assistance from NUSPE and the financial support received from the Norwegian Council of Universities' Committee for Development Research & Education (NUFU) from 1991-2001 has yielded the following benefits in Tanzania:

– Establishment of the Department of Physical Education, Sport & Culture (PESC) at the UDSM Faculty of Education in 1992.

– Launching of BA (Ed) and MA (Ed) programmes in physical education and sport studies in 1993 and 1999 respectively. Over 75 Tanzanians have already graduated from the BA (Ed) programme and five MA (Ed) students are expected to graduate in 2001.

– Acquisition of computing and other scientific equipment for teaching, learning, research and cataloguing of materials (using online indexes and bibliographies).

– Scholarship awards to 25 Tanzanians to pursue Masters and/or Ph.D. studies locally and overseas.

– Faculty exchange programmes involving NUSPE and UDSM staff.

– Library training and acquisition of physical education and sports literature. It is worth mentioning here that UDSM has received 42 books under the IASI/Human Kinetics Joint Programme of Assistance for Sports and PE Libraries and Information Centres. The former NUSPE librarian and an executive member of IASI, Ms Anne-Mette Vibe, facilitated the library training and acquisitions.

– Connection of the PESC Department to the rest of the world via telephone, fax, video, television and internet.

– Infrastructure upgrading e.g. renovation of UDSM swimming pool, gymnasium and PESC office complex.

As the Tanzania case shows, international assistance can help to strengthen the institutional capacity for sports science research, human resource development and diffusion of information essential to sound decision-making, design and management of sports development projects and education of the public at large. Users of the sports information resources at UDSM come from the public and private sectors: sport administrators, planners, teachers, students, researchers and other private citizens. It is perhaps important to consistently stress that one of the key contributions that globalisation assistance can make towards sports development in the south lies in the diffusion of sports skills, knowledge and technology throughout the target nations.

8. Conclusion and recommendations

The aim of this paper was to explain the role of globalisation in the development of sports information and documentation activities in developing countries. Although globalisation has the tendency to exclude those without the appropriate institutions and dispositions to capitalise on global resources, it can also open up spaces for those in the margin to get connected to each other and the rest of the world. But this connectivity will not simply happen. Solidarity projects enacted by the dominant

economies are urgently needed to deal with market failures and underdevelopment in the South. It is important however to bear in mind that even within a general pattern of slow progress, individual countries in the South are so different (socially and geographically) and internally so diversified as to make any totalising policy prescriptions clearly impracticable.

The probability that different motivations lay behind sports information and document programmes across countries suggests that developing nations are likely to prefer a case-by-case approach to a hard and fast rule when foreign aids are being deployed towards developing Third World sports information structures and institutions. This point underscores the need for inclusive paradigms, multi-agency perspectives, specificity and a culture of collaboration when sports information professionals frame pivotal questions about system change, problem identification, goal setting, resource allocation, programme implementation and evaluation. Such actions and strategies then become truly transformative and affirmative. Put differently, if inclusive planning has always been important in achieving the goals of equity and sustainability with respect to sports information and documentation projects, globalisation has made it much more so.

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International Co-operation
in the Field of French Sport Information
The Databank "Savoir Sport"
S31

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1. Introduction

Among the many problems raised by the supplying of information to a target audience, the control of the sources and the adequacy of the final product to the needs of this audience doubtless constitute the keys to the success of the project.

By control of the sources I mean not only the capacity to count and use all the information available on the subject, ensuring that it is exhaustive, but also the capacity to select and extract the useful information for the target audience. By adequacy of the final product I mean the supplying of information that is suitable for use by the target audience, and according to appropriate procedures.

These two points are at the origin of the co-operation which began between the National Institute of Coaches Training (INFE) of Montreal (Canada), to which we are indebted as initiator of the project, and the INSEP of Paris (France) its partner in this operation.

The two institutions share common goals concerned with the initial and continuous training of national sports management staff. Acting within the same linguistic and cultural framework of the French-speaking world, it was up to them to join their efforts and resources for the achievement of one of their fundamental missions: the supplying of information that, if implemented, could lead to the improvement of sports performance for specialised sports management staff.

2. Objectives

The first objective is the enrichment of scientific and technical documentation in French, accessible to French-speaking coaches, to contribute to their improvement and the improvement of the conditions of athletes' sports management. This project should complement other means of training and improving French-speaking coaches. It aims at filling the well-known gap between scientific research and coaching.

The second objective aims at contributing to the development for coaches of an information culture based on the use of new technology.

The third objective aims at strengthening the links of sport co-operation between France and Quebec.

The fourth objective is to provide an opportunity for specialists in sports sciences and technology of Quebec and France to become well-known in the sport circles of the countries which have in common the use of the French language.

3. The product

It consists of a website (*www.savoir-sport.org*) with free access, and is composed of short knowledge features indexed by broad topics that can be used by coaches within the framework of their professional activities. The selected topics are those which relate firstly to sports performance improvement (see the details in annex 1):

- performance analysis;
- preparation for performance;
- competition management;
- technologies applied to sport performance;
- athletes' health.

The information may deal either with scientific, technical or professional experiences. A search engine, being prepared at the date of writing of this paper, will very soon facilitate access to their consultation.

4. Implementing the project

4.1. Editorial conditions

4.1.1. Editorial committees

To produce and spread a common information product requires definition and acceptance, by the two parties, of rules and principles to ensure the homogeneity of the product as well as a harmonious allocation of the tasks. Taking into account the geographical distance between the two institutions led to the choice of two editorial committees, one in each institute. The editorial guidelines were defined during a common meeting of the two committees which remain in close connection in particular through electronic mail. An annual meeting of the two colleges makes it possible to follow-up and to update, jointly, these principles.

The editorial committees are the keystone of the project. Adopting a process based on demand analysis, they initially defined the characteristics of the final product, i.e. the structure and characteristics of the information forms, their thematic classification and architecture as well as the access procedures of the website displaying them.

The second task of the editorial committees is to detect and select the primary sources of information. This was carried out in collaboration with the two committees, in order to avoid possible doubles and led to the lists of periodicals processed by each party.

The committees then jointly defined the practical procedures of establishment and validation of the information forms, constituting a production line in which each link plays quite a specific part.

Finally the points relating to the contractual agreements between the two partners were reviewed for the implementation, follow-up and financial management of the "Savoir Sport" project.

After this creation and start-up phase, the main functions of the editorial committees were as follows:

– ensure production, in the two respective sites, while respecting the editorial criteria jointly determined;
– validate the authority of the information produced by the delivery of the "final proof" on the site "Savoir Sport";
– follow-up the contractual relationship between the two partners.

Although it was not subject to any specific rules, the composition of the editorial committees is rather similar in the two institutions. They comprise each about ten people belonging to the various sectors involved: institution policy, trainers of managers, sports technicians, information specialists, international relations specialists.

4.1.2. Editorial guidelines

From a general point of view the information displayed on the "Savoir Sport" site requires simultaneously a number of intrinsic qualities:

– first, be likely to contribute to the development of sports performance, while respecting athletes' health and sports ethics;
– second, report on a piece of knowledge or an experiment with an innovative character;
– third, describe a piece of knowledge or an experiment usable by the coach, thus having a strong regulatory component;
– fourth, deliver a validated piece of information, i.e. recognised for its relevance by the experts in the field;
– fifth, deliver a short piece of information in summary form, targeted at a single topic.

From a specific point of view, three types of information are selected and classified, processed and displayed in the various topics constituting the "Savoir Sport" catalogue:

– Scientific information: deriving from scientific publications, validated by an editorial board recognised by the scientific community. This literature requires considerable amounts of processing to extract the useful information, stressing the practical consequences for the coach that the primary source contains. It must also be rewritten to "translate" the scientific style into "current language" without damaging its scientific and informative value.

– Technical information: in this field the primary sources mainly result from the technical reviews of the sports federations, generally supervised by an editorial board composed of technicians of the sport concerned, but also from proceedings of seminars or conferences, organized by these same sports federations; or any other documentation validated and published by these same organizations. This type of information is processed, just as the preceding one, with the objective of extracting short, useful and accessible information for coaches.

– Information resulting from the free expression of a professional experience. The inclusion of this type of information was debated by the editorial committees because of the greater difficulty of validating it, for it does not come from a primary source already validated by a scientific committee or from an editorial board as for the preceding categories. However, it was selected as very useful to help knowledge development in sports coaching, which very often proceeds from exchanges and oral communications between sports technicians when they meet. This information thus results from the writing of an original text, reporting the professional experience of a sports coaching actor (coach, manager, doctor, psychologist, etc.) and which leads to specific proposals for athlete coaching.

Each type of information appears in a separate directory within the "Savoir Sport" data bank: scientific forms, technical forms, free opinions.

These start with the detection and the selection of a primary source (in the case of the scientific and technical forms) or with the reception of an original text (ordered or spontaneous) for the free opinions directory.

Concerning the French Committee, the choice of the primary sources was primarily based on the documentary funds of the INSEP Information and Documentation Service (SID) which regularly analyses 350 specialised periodicals in all disciplines and in the main international languages. In order to be co-ordinated with its INFE colleagues, the French Committee analyses as a priority the European periodicals and those of the former Eastern European countries; the Canadian Committee analyses the English-speaking reviews and those from the American continent.

The initial processing of the information is carried out by a "writer". He is a specialist in the subject dealt with in the primary source. It is indeed crucial that the data is processed by a specialist in the field concerned to ensure the relevance of the contents and topicality. An analytical abstract (as opposed to a documentary reference) of the primary source is then written, respecting the editorial criteria mentioned above. This nuance is important because the aim is to provide substantial primary information and not simply describe its consequences, and to impose compliance with the rules of the Copyright agreement we entered into.

The form drawn up by the "writer" or the original article suggested for the third heading, according to a well defined framework seen in annex 2, are then submitted to an "editor", a specialist in the field in question, who confirms its appropriateness, concordance with the primary source, scientific and/or technical relevance, and innovative character.

At the end of the cycle, the Editorial Committee delivers the "final proof" on the "Savoir Sport" site.

The process can be summarised by the following table :

	SAVOIR-SPORT: 3 DIRECTORIES		
	I **Scientific forms**	II **Technical forms**	III **Free opinions**
Information resulting	Scientific publications	Technical publications	Professional experiences
Primary source	**Yes** Ex of primary sources: Scientific reviews (editorial boards) Published Information	**Yes** Ex of primary sources: Federal reviews, Proceedings of congress, meetings... (editorial boards) Published Information	**Not** Ex: professional experiences (coach, manager, doctor, physiotherapist, psychologist...) Not published Information
Writer	**Reading form** Extracts useful information from the primary source, stressing the practical consequences for the coach	**Reading form** Extracts useful information from the primary source, stressing the practical consequences for the coach	**Original article** Writes an original text leading to a concrete proposal for the coach
Editor	Validates the appropriateness of the form Checks concordance between the primary source and the proposed form Scouts for a possible practical proposal	Validates the appropriateness of the form Checks the concordance between the primary source and the proposed form Scouts for a possible practical proposal	Validates the appropriateness of the form Scouts for a possible practical proposal

4.2. Technical procedures

4.2.1. The production line

The whole process is ensured by a production line which, from the primary source or original article, leads to the displaying of information on the "Savoir Sport" site. Various stages mark out this process which is supervised by a production co-ordinator. He follows up the form technically, from the moment it is described by the writer until it is displayed on the site. The forms are dealt with by the actors of the production line by electronic mail. All the instructions relative to the various stages of processing are gathered in a guide, widely distributed in the institute to all possible actors. It contains, among other:

− the updated list of the scientific and technical periodicals "authorised";
− the list of the "Editors of the Savoir Sport site", indexed by specialised fields according to the list of topics.

The following diagram summarises the way the production line works:

ACTORS	PROCESS
Documentalists **Authors**	Directory 1: Setting up the lists of authorised scientific reviews Directory 2: Setting up the lists of authorised technical reviews Directory 3: Writing original articles
Writer	Form Writing - Analysis: R1 and R2 - Original article: R3
does not know any editor · if not validated	
Co-ordinator	Storage Backup copy Identification and submission to an editor Return to the writer if not validated
if not validated	
Editor	Information validation (relevance, topicality, usefulness)
Validated · if large amendments	
Co-ordinator	Spelling correction Bibliographical checking Update the backup Submission to the editorial Committee
if not validated	
Editorial committee	Final validation for "final proof"
Co-ordinator	Final backup Transmission to the Administrator
Administrator	Displaying on *"www.savoir-sport.org"*
Savoir-Sport.org	

identifies an editor

This is carried out by the Administrator through the Internet, with a personal identification and a personal password to ensure that he can work on the site safely.

For the time being, the introduction of new information into the database is carried out only at the end of the line, when the complete final form is loaded.

All entries leading to the production of a form, as described in the previous diagram, should be carried out from now directly on the database. Under these conditions, the database Administrator would only have to validate the form with the "final proof" forwarded by the Editorial Committee (according to the diagram presented in annex 3).

4.2.3. Architecture of the site (annex 4)

For the time being, the site *www.savoir-sport.org* is made up of three chapters:

− The first one presents the "Savoir Sport" project: its missions and objectives, its history, a description of its management and partners, access to the function of the writer, and a warning on the conditions of use.
− The second chapter gives the contents of the forms bank, and, particularly the five topics which make it up. It constitutes the core of the site.
− The third chapter, which was in the process of being loaded when this paper was written, includes the lexicon of the terms used under the heading "descriptors" of the forms for their indexing. The thesaurus used for the French database Héraclès has been used as a basis for the development of this lexicon.

In the immediate future, the following will also be added:

− a search engine which will make it possible for the user to find the information sought for the combination of various search keys: descriptor, sport, topics, dates, author of the primary source;
− a chapter devoted to scientific research in the field of sports coaching, in which the researchers will be able to introduce themselves and present their projects;
− finally, a chapter in which the recent publications concerning coaches will be mentioned.

4.3. Legal conditions

The type of primary data processing that we carry out and, consequently, that of the resulting information, is subject to the international rules of **Copyright**.

Since our activity is not simply the documentary description of information, but also the extraction and displaying of a substantial part of it, allowing the user to avoid reading the primary document, we are under an obligation to obtain the preliminary authorisation of the editors – the owners of the primary source. This is what we did, creating a list of authorised reviews progressively supplemented as we obtained new authorisations.

It should be noted that the writers themselves are considered as authors and are thus protected by the Copyright rules mentioned by the publishers of the site *www.savoir-sport.org.*

The agreements between INFE and INSEP gave place to a co-production protocol for the database and the site. It is based on the identification of the common objectives founding the project, defines the common responsibilities for the two partners, particularly those concerning the editorial policy, concerning the development of the site and its financing, and the commitment to comply with the ethical rules and legal regulations on the matter.

The protocol also recognises the right of ownership and the responsibility of each partner for his own contribution. Lastly, as in any contract, it specifies the conditions of duration, termination and arbitration in the event of disagreement.

5. Conclusion

To conclude, we can consider the "Savoir Sport" project as a model for several reasons:

–   First, as far as international relations are concerned, it is not always easy to combine the objectives and the contingencies of different countries, even when they share the same language, which is our case. However, we reached a fast consensus which allowed us to develop the project in a reasonable amount of time.

–   Second, it is not easy to set up collaboration between the sports and university worlds and to fill the gap existing between the huge body of knowledge in sports sciences and the needs of the coaches in charge of managing the athletes and particularly elite athletes. This was made possible mainly thanks to the joint presence in the two associated institutes of actors from these two circles who have a long experience in mutual collaboration.

–   Lastly, beyond the recognition and the satisfaction of the needs of a specifically French-speaking public, the "Savoir Sport" project aims to take part in the international effort to enrich the information body available to sports managers and coaches.

Annex 1
List of topics

Performance anaylsis:
–   energetics
–   mechanics
–   tactics
–   technique
–   environmental factors (physical, social)
–   psychological factors

Preparation to the performance
- psychomotor training and development
- energy preparation
- dietetic preparation
- planning of coaching
- methodology of coaching
- mental preparation
- muscular preparation
- psychological support
- tactical preparation
- technical preparation
- recovery and regeneration
- alternative approaches (acupuncture, hypnosis, yoga, etc.)
- ergogene assistance (legal)
- environmental factors (physical, social)

Competition management
- strategic management
- physical management
- mental management
- time management
- psychological support
- dietetics
- recovery
- ergogene assistance (legal)
- alternative approaches
- environmental factors (physical, social)

Technologies applied to sports performance
- measuring instruments
- instruments of analysis
- sporting hardware and equipment
- specialised software

Athletes' health
- prevention
- functional recovery
- medical care
- medical treatment
- psychological impact

TITLE OF THE FORM	Writer's original title. Must be formulated in terms of regulation or interrogation within the framework of possible questions from a coach.

PRIMARY SOURCE	Complete bibliographical references which enable a return to the sources if necessary.

WRITER OF THE FORM	Name of the writer.

Diploma and/or Title and employment of the writer Sport titles	

Writer's e-mail Phone number	

Writer's Internet site	

EDITOR	Name of the editor chosen by you (cf lists) or ask Jean-paul.guichard@insep.fr

Title and employment of the editor	

Editor's e-mail	

Editor's Internet site	

TOPIC 1	The form must be classifiable among at least one of 5 topics already mentioned. Reminder: **1** Performance analysis **2** Preparation to the performance **3** Competition management **4** Technologies applied to sports performance **5** Athletes' health

TOPIC 2	Indicate 2nd topic if required

TOPIC 3	Indicate 3rd topic if required

DESCRIPTORS	5 key words maximum, can be selected (but not necessarily) among the sub-topics (see list of topics).

Sports	Indicate the sports concerned if necessary.

TEXT	4000 characters maximum.
FIGURES OR SCHEMAS OR TABLES	Indicate if you do or do not include additional documents (figures, diagrams or tables). Maximum of 2 authorised.

NAMES OF DOCUMENTS ATTACHED	Indicate the legend of the attached documents.

SUGGESTED READING	If appropriate, indicate in this box one bibliographical reference.

SUGGESTED READING	If appropriate, indicate in this box one bibliographical reference.

SUGGESTED READING	If appropriate, indicate in this box one bibliographical reference.

SUGGESTED READING	If appropriate, indicate in this box one bibliographical reference.

SUGGESTED READING	If appropriate, indicate in this box one bibliographical reference. (A maximum number of 5 suggested titles is authorised.)

Annexe 3
savoir-sport.org
Diagram of production

Documentary Sources

1

Writers

4 bis

2

Editors

3

4

5

6

Rewriter

Data Bank

9

Input on the site
www.savoir-sport.org

8

Webmaster

7 bis

7

BAT

Editorial Board

Home Page

savoir-sport.org | Lexicon (Heracles) | Search Engine | Database Links with topics | Researches | Recent Publications

Lexicon of the terminology used in the document (search engine)

Controlled keywords Sports, topics, date, authors

Missions and goals
Managers
Historic
Partners (links www)

INSEP
INFE
CNMM

Policy of Writers recruitment → Registration form

Acknowledgement

Performance Analysis
Performance Preparation
Competition Management
Performance Technologies
Athlete Health

Objectives
Current projects
Research Results
Researchers Presentation

Summaries
Archives

Coaches training
Scientific knowledge
Athletes coaching
Results validation

Integral publication of recent scientific results

D B