



“COMPUTER – A VEHICLE FOR PROMOTING  
PHYSICAL EDUCATION, HEALTH, FITNESS AND  
WELLNESS”



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**ABSTRACT :**

*We are living amidst one of those very innovative phase where unusual occurrences come along every few generations. What has been occurring over the past few decades is a fundamental paradigm shift that is moving society as a whole from the age of industry to the age of information.*



**KEYWORDS :** information technology , Physical Activity.

**INTRODUCTION :**

The era which is created in this new society that is being formed is called IT - information technology. IT is simply the tools and methods used for the identification, organization and manipulation of facts that we call data. IT has become the engine that is driving all sectors of today's economy be it industry, government, education or indeed, sports.

The real power of technology comes when we tie the individual machines together through the medium of a network. The computer network most familiar to the public is the internet. And the most familiar part of the internet to most people is the World - Wide - Web also known simply as "the Web".

This is the most important piece of equipment that lies at the heart of the whole IT process. The computer and the software that it runs is an essential element in the new societal paradigm and it is a key to success for the modern sports and in promoting the Physical activity, Health , Fitness and Wellness of an individual. It is this piece of equipment that has taken the Sports, Competitive Games and Physical Activity to a transformed phase with a giant leap

The computer serves as a viable instructional tool in this process of educating the physical being of each individual student. By the very nature of activities related to physical education, the role of the computer is supportive in nature with respect to the curriculum. Physical education implies physical activity, and normal computer use is not characterized as a physical activity.

It allows the sports administrators, coaches ,athletes, physicians, physiotherapists to maximize the return on scarce resources whether it is people, facilities , equipment or finances. In turn, it is also perhaps the single most important tool to insure the extended reach of sport and recreational programming and with it, the whole idea of inclusion in these activities of the greatest number of participants and all sports lovers.

## **APPLICATION OF TECHNOLOGY IN SPORTS**

Usage of technology in sports is a technical means by which athletes attempt to improve their training and competitive surroundings in order to enhance their overall athletic performance. It is the knowledge and application of using specialised equipment and the latest modern technologies to perform tasks more efficiently. Examples of sporting technologies include golf clubs, tennis rackets, pole vault poles, athletic sports gear (clothing and footwear), advanced computer stimulations and motion capture.

Time has become a high value commodity and people want technology to enhance their sporting lives. In this scenario it is the role of technology to provide participants with the real-time information they need.

### **A changing world of broadcast and media services**

The record-breaking TV audience for the 2010 football World Cup™ was estimated at 28 billion. Around 70 million people viewed the event online. This trend is set to continue as both broadcasters and viewers become more comfortable with streaming content direct to home TVs and computers. At the next World Cup™, we will watch the games on TV, computers, mobile phones, tablet computers, and interact with other fans.

### **The rise of the virtual umpire**

Fans now expect technology to be used for controversial decisions. For example, cricket umpires can now use Hawk-Eye’s motion analysis technology, and rugby referees can consult a video replay. Not all federations may agree with this approach but it does need to at least be considered when designing a venue.

### **Technology convergence and smart systems**

Major events and venues use smart systems to optimise security, transport and facilities management. For example, UK football clubs are leading the way with smart cards that act as membership, loyalty and payment cards, enhancing efficiency for spectators. Technology also enables these venues to conduct environmental and energy management in real-time by linking the event schedule and occupancy information with building management systems to optimise on stadium bowl or concourse cooling.

### **Technology links sport and money**

From broadcast and media rights to retail and membership, technology plays a vital role in the sports business. High profile advertising panels can get sponsors’ messages to fans in increasingly sophisticated ways. Smart stadium access is used to track people’s spending and behaviour patterns, enabling operators to offer spectators a more personal experience.

The back bone of the competitive sports and game type activities which need sustained interest and aims at the optimal progress in the performance of the team is accurately assisted by the statistics derived. The process of storing, cumulating and calculating data, and printing formatted reports are comfortably handled by the computer. The information received from the data not only may be used for dissemination purposes but for analysis of a student's performance in a particular activity.

### **Classroom Utilization of Technology Specialized Software**

The greatest value of computers may reside in the ability to provide improved support to classroom instruction, and the variety of software programs for such use continues to grow. Commercial and shareware programs are available to track grading, student athletic performance, and fitness; conduct health assessments; provide simulations of disease; and monitor research projects, among other functions.

Databases with the tools for capture, storage, management, retrieval, integration, analysis, interpretation, reporting, and dissemination have the potential to be the single most powerful tools in sport science. Knowing how to collect, store, access, retrieve, and integrate information is critical to effective performance analysis and decision-making.

### **Multimedia and CD-ROM**

Computers have integrated learning with multimedia presentations. Traditional encyclopedias and reference books have been replaced by compact discs with read-only memory (CD-ROM or CD) that contain pictures, sound, and video, as well as the standard text. In the kinesiology classroom students can observe and listen to the mechanics of movement in slow motion and play over those parts they do not understand. In health education classrooms the growth of an embryo can be depicted to birth. Instructional topics remain traditional, but the delivery is nontraditional and allows the student to move at her/his own pace (Gold, 1991).

### **Computer Assisted Instruction**

Computer-assisted instruction (CAI) provides students with an alternative to classroom settings and frees the instructor from rote processes that are better handled by the computer. Mohnsen (1995) identified a number of reasons for using CAI in physical education. Among them were suggestions that CAI provides students with the "why" behind health-related fitness; it provides unlimited practice, review, and remediation; students stay actively involved; and it meets a variety of student needs. CAI, if individually developed, requires considerable time on the part of the instructor, but this is compensated for by increased learning time available in the classroom. Using CAI an instructor can develop or acquire a series of supportive and reinforcing software. For example, students in a nutrition class might participate in a CAI-based eating habits survey that provides students with information about their nutritional habits, collates data for the entire class, and provides the teacher with a report to use as a teaching tool.

A number of WWW sites relate to sports, fitness, health, and recreation. A home page is a starting point for exploration into a given host site's resources and connections to other sites. ERIC maintains the AskERIC Virtual Library home page, which provides a gateway to ERIC information, including lesson plans and "infoguides" on relevant topics. Health and recreation pages are very common. The Whole Internet Catalog offers a section on health and includes such topics as substance abuse, safer sex, mental health, and nutrition. Yahoo, organized similarly to the Whole Internet Catalogue, is the source for numerous different starting points for investigation into health and recreation.

### **The Digital Games**

Gaming is often a social experience for teenagers. Seventy-six percent of teenagers play games against others at least occasionally, and 65% of teen gamers play against other people in the same room (Lenhart, 2008). Because video game play, including exergame play, often occurs with peers, opportunities for social interaction may influence friendship selection, self-esteem, moods, and motivation. Indirectly aiming at positive psychosocial outcomes. The enormous popularity of the digital games are also motivating the children to involve in the physical activity in a larger number. Digital games can be used not only for fun and entertainment. The term 'serious games' denotes digital games serving serious purposes like education, training, advertising, research, and health. Serious games, particularly adventure and shooter games, already play an important role in health education and rehabilitation, e.g., to enhance health related physical activity, prevent asthma, change nutrition behavior and alleviate diabetes, prevent smoking. Serious video games (VG) offer new opportunities for promoting health related diet and physical activity change among children.

Games can be designed to use storylines, characters, and behavior change procedures, including modeling (e.g., engaging characters make changes themselves, ), self regulatory behaviors (problem solving, goal setting, goal review, decision making), rewards (e.g., points and positive statements generated by the program), immediate feedback (e.g., through characters and/or statements that appear on the computer screen at critical decision points), and personalization (e.g., tailored choices offered at critical junctures, based on responses to baselines questions related to preferences, outcome expectancies, etc)

### Computers and Sports

Virtually every aspect of sports – from how they’re played to how they’re measured, to how they’re viewed – has been forever altered by the computer age.

1. **Statistics** – Sports fans love statistics. They are the common thread binding past and present together; the gauge by which we measure modern-day athletes to their forerunners. Computers give us the ability to compile vast databases of statistical information in real time, thus facilitating for optimal performance of the athletes.
2. **Research** - A clear demonstration for the evolution and propagation towards computer science in sport is also the fact that nowadays people do research in this area all over the world. . As sport involves human movement. This can be quantified with numerical data, graphics, and audio/video recordings. Multimedia resources in this context are exceptionally valuable, especially if the information can be accessed via creative interfaces that provide timely and efficient information that is tailored to each individual’s unique requirements.
3. **Databases** - with the tools for capture, storage, management, retrieval, integration, analysis, interpretation, reporting, and dissemination have the potential to be the single most powerful tools in sport science. Knowing how to collect, store, access, retrieve, and integrate information is critical to effective performance analysis and decision-making.
4. **Scouting** – Today’s managers and scouts have virtually unlimited data at their fingertips with which to assess athletes. Everything from how effective a pitcher is on 3-days’ rest to the average number of fastballs he throws on a 3-2 count, can be summoned at a mouse-click.
5. **Equipment Design** – CAD, or computer-assisted design, has led to incredible innovations in sports equipment. Helmets have become more effective in providing player protection; padding is more form-fitting and allows for greater range of motion. Club design has enhanced golfers’ performance.
6. **Bio-mechanics** – By studying the movements of athletes via computerized simulators, manufacturers have been able to develop better training equipment; trainers are able to customize workout regimens for individual athletes, and sports medicine is more capable of assessing, and preventing, sports-related injuries.
7. **Performance Analysis** – Another benefit of bio-mechanical studies, in that it allows players and coaches to break down the motions of an athlete – scrutinize golf swings or batting stances, for instance, in order to maximize the player’s performance.
8. **Simulated Games** – Team and individual players stats can be used to determine probabilities in actual game situations by inputting the data into a simulator, which of course leads us to:
9. **Video Games** – Fans of the game can manage simulated games and make managerial decisions with the same info available to the actual coaching staff. Realistic graphics and body movements are common in modern-day video games, thanks again to bio-mechanical research of the pro athletes themselves.
10. **Controlling Scoreboards** – The pro sports venues of today are managed by a large array of computers which will update player stats, out-of-town scores, graphic displays, even weather forecasts in real time.
11. **Official Websites** – All of your favorite teams are just a click away. You can look up stats, schedules, the latest team news, buy tickets and merchandise, all at your fingertips. Historical archives, streaming video, interviews and scheduled events are also online.

12. **Fantasy Leagues** – Online fantasy leagues are available for fans who want to really take control of a big-league franchise, from the draft to the playoffs. With scouting reports from the pros, you can put together your own squad from the ground up and go head-to-head with fans from all over the world.
13. **Sports Media** - Sports media outlets use computers every day in their jobs. Writers use computers to complete research on their stories, while video editors use various applications to create vignettes and film pieces about their subjects.

## COMPUTER AND PHYSICAL EDUCATION

In this area of development the computer can make significant contributions via similar modes of instructional applications used in other areas. Transfer of the learning must take place when the student applies the training to an actual physical activity. Because there necessarily exists a direct and indirect correlation between the acquisition of intellectual concepts necessary to function in an activity and the actual application of these principles in the participation of the activity, the computer assisted instruction type of uses are quite prevalent in areas of physical education in the recent times. When one examines the amount of time spent in a life span of seventy years, some interesting statistics emerge. The average person spends one thirty-fifth (3%) of their life on formal education preparing them for the one-seventh (14%) of their life spent working at some occupation. Figuring in one-third of a lifetime for biological necessities such as sleeping and eating; one-half (50%) of our life is left to discretionary activities and recreation. Thus, there exists a need in the formal education process for preparing students for half of their lives. This need is largely served by physical education and recreation courses offer that both the elementary and secondary levels.

Typically, education in a physical activity incorporates not only the actual play, but instruction of rules, optimal strategies, general feel of play, physical as well as other benefits, and skills development. Even though computer is not directly involved in the play of the activity, it serves as an essential supportive function.

Physical education courses provide their own laboratory experience via the physical education facilities thus not needing the "computer lab" as in many other subject areas. However, there exists effective constructive instructional computer uses where the computer is used directly in the physical education curriculum.

Health and physical education teachers can use computers for a variety of purposes. Teachers and students can use software to produce health and physical education newsletters, create calendars and puzzles, and develop signs, posters, and illustrations for the classroom or gymnasium. Using specialized software, students can participate in a cardiovascular risk assessment, analyze their nutritional intake, or determine their fitness level.

There are several kinds of CAI software available for use in health and physical education programs. They include the following:

- Drill and practice (e.g., learning the names of muscles or rules of a sport)
- Tutorials (e.g. learning the parts of the heart and taking one's pulse)
- Programmed instruction (e.g., learning the key elements of a tennis serve and volley, etc)
- Educational games (e.g., learning the rules of football while playing a simulated game)
- Simulations (e.g., determining the effects of alcohol consumption at a party) (Mohnsen, 1995)
- Various physical activity guidelines published in the websites.

The computer aids in drill and tutorial uses which appear to offer few benefits. Rules for an activity maybe learned via computer drill however, the amount of the necessary time utilized to accomplish this for a class will probably be too great to consider this as a viable use. Individualized computer drill on exercises and their physiological benefits can be useful as an instructional means of learning activities which strengthen all areas of the body for maintaining life-long physical fitness.

To reiterate, for this instruction to be effective the necessary transition must be made from the mental knowledge and benefits of the activity to physically doing the activity.

Other management types of assistance can be offered to the physical education teachers such as using the computer to schedule the various school facilities with the physical education classes. Although the computer is not being directly used in the instructional process, it is supporting and assisting the teacher in performing the task of teaching. Additionally, programs may be written by students to underscore the teaching of concepts. Many benefits are derived when the student via the program must teach the computer exactly what to do.

- Raise awareness of the positive benefits of Physical Education;
- Increase awareness in the public, media, governmental and private sectors about the increasingly serious situation of Physical Education world-wide;
- Offer a platform for organizations and institutes to present the activities they are undertaking;
- Identify areas where co-operation is necessary;
- Compile existing research, statements and declarations;
- Strengthen networks and co-ordinate plans of action and implementation.
- Introduce new concepts, review prior knowledge, or trigger discussion.
- Demonstrate model performances (e.g., tennis serve in fast and slow motion)
- Demonstrate game/sport strategies (e.g., diagramming plays)
- Analyze movement skills (e.g., frame-to-frame analysis of a runner)
- Provide stimulus for mental imagery (e.g., visualizing the perfect golf swing)
- Administering tests and quizzes (e.g., identifying critical errors in a golf swing)
- Create a medium for student projects.

### **COMPUTERS AND THE ‘DIFFERENTLY ABLED’**

Technology can be a great equalizer for children with disabilities. For students with impaired vision, hearing, or mobility the benefits are obvious. The benefits can be just as powerful for students with limited cognition or perception. Technological tools enable teachers to provide new and more effective learning experiences while individualizing instruction to meet a broader range of student needs.

Here are some examples of the ways assistive technology can enhance health and physical education learning experiences for children with disabilities.

- Improvements in sensor controls enable subtle motor movements to control mobility devices such as wheelchairs. This allows the student increased independent movement in the school and enables participation in a wider range of activities, especially in the physical education setting.
- Amplification devices can filter extraneous background noise (e.g., on the playground, gym) for the hearing impaired.
- Larger computer screens (e.g., 20 inch), cameras with zoom lenses, and enhancement software can enlarge video images.
- Voice recognition devices enable a high-level quadriplegic complete control of computer software. Touch screen monitors, adaptive switches (e.g. joysticks).

### **Computers and the Public Health, Lifestyle and Wellness**

Successful aging is largely determined by individual lifestyle choices and not by genetic inheritance. Few factors contribute as much to successful aging as having a physically active lifestyle. Regular physical activity is important for the primary and secondary prevention of many chronic diseases (e.g., coronary heart disease, noninsulin dependent diabetes mellitus, obesity), disabling conditions (e.g., osteoporosis, arthritis), and chronic disease risk factors (e.g., high blood pressure, high cholesterol).

Promoting physical activity among older adults is a national public health priority. A large preventable burden of morbidity, mortality, and health care costs currently exists.

Insufficient physical activity is defined as less than five times 30 minutes of moderate activity per week, or less than three times 20 minutes of vigorous activity per week, or equivalent. Insufficient physical activity is the fourth leading risk factor for mortality .

Approximately 3.2million deaths and 32.1 million. Participation in 150 minutes of moderate physical activity each week (or equivalent) is estimated to reduce the risk of ischaemic heart disease by approximately 30%, the risk of diabetes by 27%. . Additionally, physical activity lowers the risk of stroke, hypertension and depression. It is a key determinant of energy expenditure and thus fundamental to energy balance and weight control .

## CONCLUSION

In this era of various technological advancements along with the deadly hypokinetic diseases coming up, there is an immense need for the Physical Education, Health Fitness and Wellness to be given priority.

The hybridisation of classroom pedagogy for the children along with the practical experience will be an effective method and will also be helping the system if higher education system to flourish in a broad scale, as the effective teaching depends on the way that the information is communicated to the learner. The improvisation of the communication between the physical education teacher and students takes place .

At the present time, many health and physical education teachers may not have access to the technological developments and advanced means and methods pertaining to computers. However, the use of computers is important for students in all disciplines. Students need to see how technology is used within a real-world context.

Information Technology can be used to enhance and support instruction for all students, creating student interest and providing students with valuable skills. As students and teachers prepare for the new millennium, technology and the community it creates grow as vital parts of educational reform. Health and physical education teachers need to increase their efforts to become technologically fluent and to incorporate various technological devices into their instructional program.

The application of the computers in physical education and sports is informative, effective, practical, flexible, social and helps in arriving to definite answers for various debatable statements such as inefficiency of the country in producing more number of medals at the world class competitions or inconsistent performances at the world level sports and games competitions.

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