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Introductory Chapter: Rising Interests in Sports Sciences

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1. Introduction

Sport became a product of interest in different domains of the current society. Beyond the competition or leisure practice of physical activity, there is a large variety of interests regarding the sports contexts, specifically those with social and economic purposes. Using physical activity and sport, we can develop social values and those that today are linked with emerging market economies. These are nowadays mainly based on the notions of success, progress, and external conformity. There is a clear need for being properly informed and aware of this set of values for the optimal development life in society, benefiting from a clear involvement in sport. The business world has found in sports a new investment path, either through participating in scientific and technological development or by taking advantage of the profitability of the activity itself.

The investment in technological development by specialized companies, in partnership with the sports institutions, ensures continuous development of athletes through the optimization of performance but also ensures more information to those who are spectators. Furthermore, this development also benefits non-competitive activities, with people now being able to follow and monitor their physical activities in real-time. The progress of technological devices leads to the optimization of sports performance, increases the efficiency of the training process, and creates reliable monitoring and increased motivation to practice for the “common” person. The user benefits either by increasing performance or by improved health status. Being seen as a potential of an investment, large companies are looking closely at these areas associated with sports and health, to guaranty better quality of life for all people. Also, this technological development allows for different experiences and contributes to what is called sports tourism. The search for new sensations, different events, and the visit to places that provide different experiences for users, increase the investment of cities and local towns in sports events and the different range of activities. The purpose is to increase tourist interest and investment in local development.

2. The technological development

Technology is a resource in constant evolution, which increasingly provides greater utility in almost all activities developed by humans. Sport is no exception. Technology is closely associated with sports and physical activity, offering both new possibilities and improvements in existing activities. The technology allows us to obtain better results in sports performances, optimize training programs, and deepen the knowledge through a reliable and more precise output. It provides a

lot of interventions that range from the biomechanical and physiological analysis of performance to the most suitable training plan for each sport or athlete. It will not provide victories, but it will help for sure to improve training efficiency and to maximize performance.

Research has recently been applying technological development to human motor skills, leading to the optimization of motor learning and/or technical corrections. For instance, if we have access to a device that provides feedback regarding the biomechanical analysis of the movement, it can be corrected in real-time and learned efficiently. This is a step forward for all interested people, from competitors to non-competitors, in sport and physical education, from children to adults, opening a wide range of possibilities for sports and health professionals.

3. The sport and human health

The example of wearable technology and their incorporation into personal devices allow monitoring movement in several contexts but also it allows us to prevent risky situations for human health. The technological devices are now being developed to monitor health-related signs, such as heart rate variability, respiration rate, body temperature, blood pressure, oxygen saturation, electrocardiogram analysis, and other complex variables such as stress and fatigue index. These offer a possibility of being remotely monitored by health and sports professionals, and by the individual himself. The general purpose is that, during an activity, these portable devices could be used to detect or to predict an anomaly and then provide the alarm to the health professional. All these new and emerging knowledge comprises a lot of issues that should be discussed and alert us for the continuous need to update our knowledge on the emerging technology applied to sports and human health.

The intervention of sports professionals has been benefiting a lot from this development. For example, recently a linear position transducer has been applied to monitor velocity during resistance training in older adults. This allowed us to better control the training load and to monitor progress in each single training session. The use of this kind of technology assumes high relevance in competition, but in older adults, it could be of huge interest. For instance, the research found that they did not need to do usual resistance training volumes (number of repetitions and duration) to obtain the needed strength gains to perform daily activities in a better way and improve well-being. Moreover, this little device when used on daily basis prevents excessive load, allows the adjustment of training loads in each session and according to each person. This results in greater improvements with a low risk of injury. This is only an example of how the development of technology applied to sport and physical activity can be used to improve life quality, in different age ranges and populations.

4. The economic interest

In recent years, technological and social developments have dramatically transformed the way most people see time and life. In this context, tourism is going through a phase of deep transformation. More than different places or opportunities for rest, people travel more and more in search of new experiences, that could be associated with different active practices. During this transformation, the transition from tourism in which the objective was to rest, the inactivity, and the abstraction of the real world, to active tourism in which the intention is to

experience the greatest amount of remarkable experiences during travel, should be highlighted. The activity in which limits are intended to be experienced is included in the same dynamics of contemporary society, also experiencing a phase of growth and mutation.

The new economic interest might derive from investment in research and development of new technologies. There is a growing market that makes profit by the dissemination and sale of its products to the common user, who practices physical activity, and to the athlete, to optimize performances. Moreover, the new sports tourism, which aims to provide new and remarkable experiences, is also a profit potential. Note that sports tourism also provides, in addition to the sporting activities practiced by tourists, the activities in which the tourist is watching or spectator. So, it is recognized that several commercial brands identified in the emerging sports-related activities a possibility of investment and profit.

5. Conclusion

In this chapter, we have pointed out some interests that have been emerging in the field of sports sciences, related to sports performance, physical activity, health, and also the economic component. The latter has been fundamental in today's society and has become increasingly important in the sports context. Technology is increasingly present in the sports world. In terms of highly competitive sports, this reality is more and more frequent. Specialized companies are investing in the development of programs and applications to monitor the most varied sports and physical activities. New trends are now emerging in the interest of the economic market, namely applied to health and the context of tourism. Technological development has led to the rapid growth of several areas of interest in which the common link between them is the sport, as a tool for human development in today's society.

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